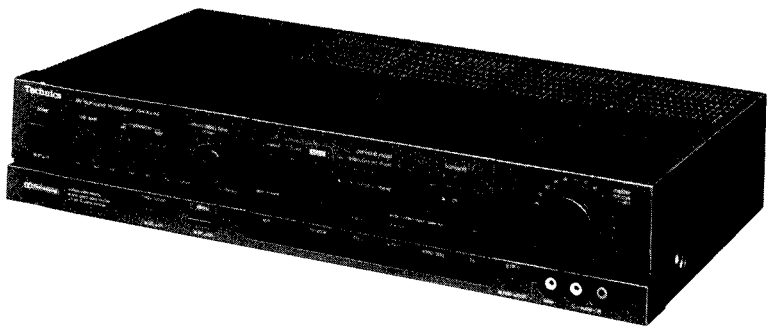
ORDER NO. HAD8606560A4

Service Manual

Processor

SH-AV44

AV Surround Processor



Color

(K) . . . Black Type

Color	Areas
(K)	[PA] . . . Far East PX
(K)	[PE] . . . European Military

Please use this manual together with the service manual for Model No. SH-AV44, Order No. HAD8604462C1.

■ REPLACEMENT PARTS LIST

CHANGE

Notes:

- Mentioned in this parts list are only those changed in Model No. SH-AV44 (K) for destination [M] area.
- Important safety notice:
  Components identified by ⚠ mark have special characteristics Important for safety. When replacing any of those components use only manufacture's specified parts.

Ref. No.	Change of Part No. SH-AV44 [M] → SH-AV44 [PA, PE]		Part Name and Description	Per Set (Pcs.)	Remarks
TRANSFORMER					
T1	SLTK5M9-W	SLTK5M10-W	Power Transformer	1	⚠
SWITCH					
S17	–	ESE37263	Addition, Voltage Selector	1	⚠
FUSES					
F1	XBAIF12NN14	XBA2C16TR0	Fuse (250V, T1.6A)	1	⚠
F2	–	XBA2C08TR0	Addition, Fuse (250V, T800mA)	1	⚠
CABINET AND CHASSIS PARTS					
6	SJT345	SJT347	Fuse Holder	2	
14	SKUHAV44-KM	SKUHAV44-KP	Bottom Board Ass'y	1	
31	SGPK331-2A	SGPK331-3A	Rear Panel	1	
32	SJS9223	SJS9221-1	AC Outlet	1	⚠
33	SJA169	RJA52YA	AC Cord	1	⚠
43	RHR111	SHR127	Bushing, AC Cord	1	
44	–	SJT388	Addition, Fuse Holder	2	
45	–	SMX897	Addition, Capacitor Cover	1	
46	–	SUDK16	Addition, P.C.B. Spacer	2	
SCREW					
N13	–	XYN3+C6FZS	Addition, Voltage Selector Screw	2	

Ref. No.	Change of Part No. SH-AV44 [M] → SH-AV44 [PA, PE]		Part Name and Description	Per Set (Pcs.)	Remarks
ACCESSORIES					
A1	SJPK2202	SJPK2202-1	Connection Cord	2	
A3	SQFK10148	SQFK10158	Instruction Book	1	
A4	–	SJP9215	Addition, Plug Adaptor	1	
PACKING PARTS					
P1	SPGK242	SPGK274	Carton Box	1	
RESISTORS					
R311	ERDS2TJ473	ERDS2TJ273	27KΩ Resistor	1	
R312	ERDS2TJ154	ERDS2TJ474	470KΩ Resistor	1	
R514	ERDS2TJ473	ERDS2TJ823	82KΩ Resistor	1	
R515	ERDS2TJ562	ERDS2TJ103	10KΩ Resistor	1	
CAPACITORS					
C306	ECCD1H470K	ECCD1H390K	39pF Capacitor	1	
C327	ECKD1H223ZF	ECKD1H1032F	0.01μF Capacitor	1	
C421	ECEA1VU470	ECEA1VU101	100μF, 35V, Capacitor	1	
C518	ECEA1CU101	ECEA1CU331	330μF, 16V, Capacitor	1	
C1001	ECKDK103PF2	ECKDNS103ZV	0.01μF, Capacitor	1	

Technics

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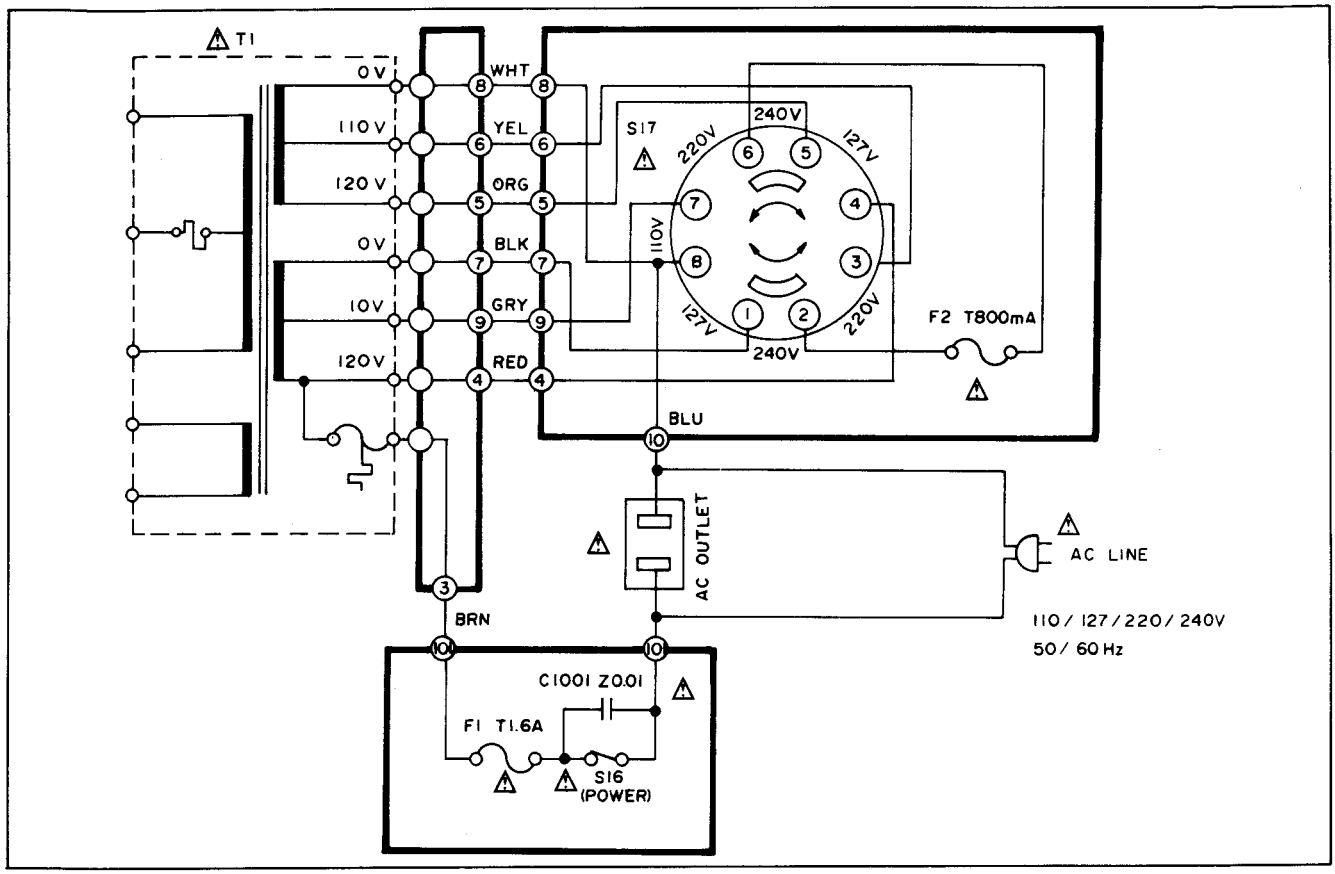
SH-AV44

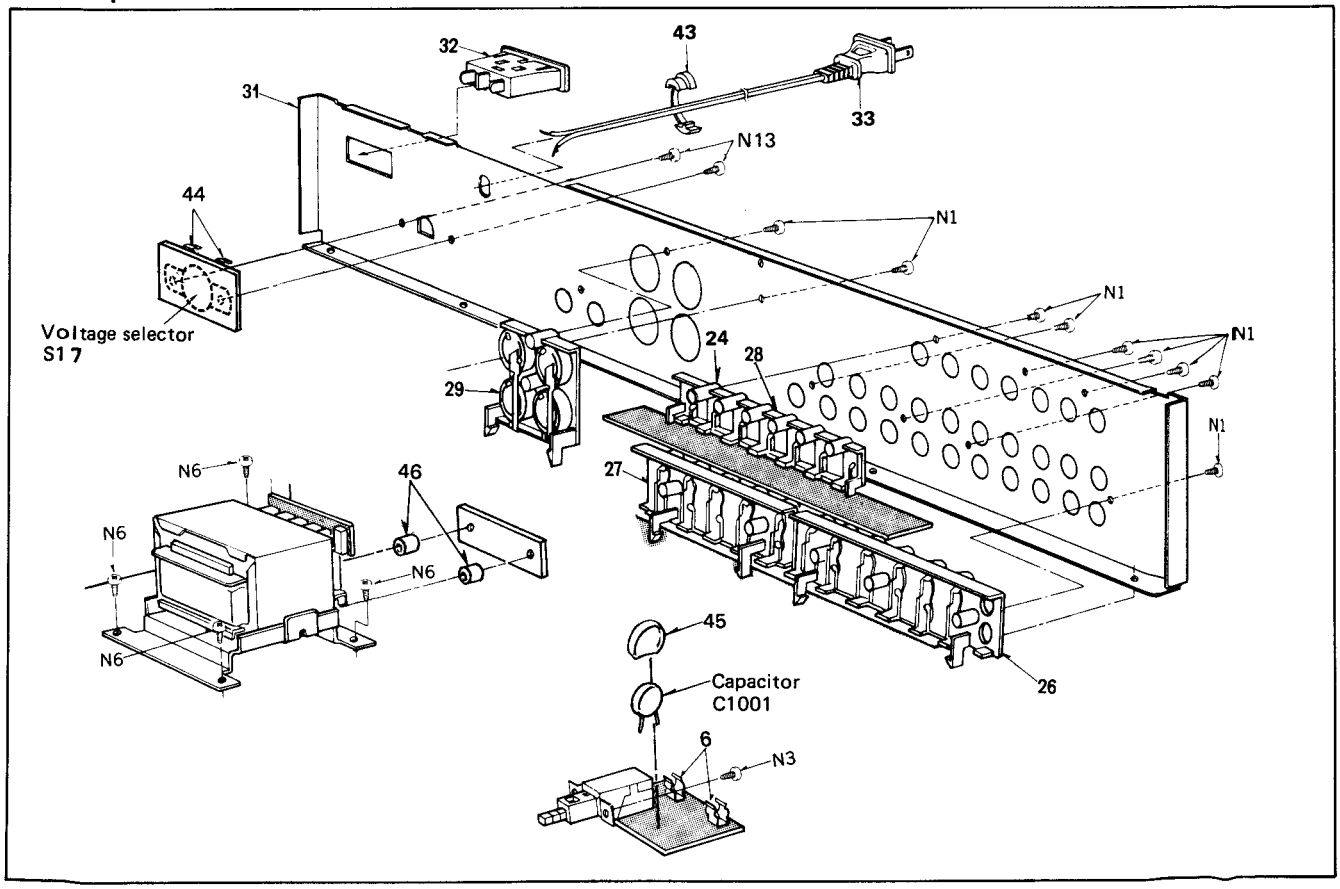
■ SCHEMATIC DIAGRAM

• Power source circuit



■ CHANGE OF EXPLODED VIEW

• Rear panel



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ORDER NO. HAD8604462C1
A2

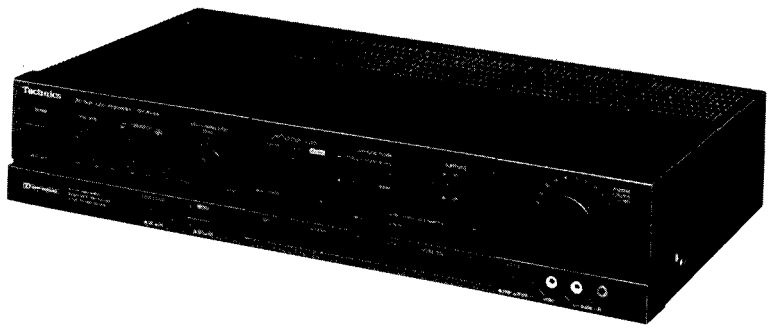
Service Manual

Processor

AV Surround Processor

SH-AV44

SH-AV44



Color

(K) . . . Black Type

Color	Area
(K)	[M] . . . . U.S.A.

SPECIFICATIONS

(IHF '78)

■ AUDIO SECTION

40 Hz~20 kHz continuous power output both channels driven (THD 0.3%):	2×25 W (8Ω)(FTC)
Residual hum and noise:	1 mV
Damping factor:	20 (8Ω)
Load impedance (SURROUND):	8~16Ω
Input sensitivity/input impedance	
•source, VCR1, VCR2, AV, tape:	150 mV/15 kΩ
•TV:	150 mV/30 kΩ
Total harmonic distortion (at 1 V output of output terminals):	0.01% (1 kHz)
Output voltage/output impedance:	300 mV/1 kΩ
Center channel output voltage/ output impedance:	300 mV/1 kΩ
S/N (surround sound OFF):	90 dB
Low boost (100 Hz):	+9 dB
Recording output level:	150 mV
Frequency response (surround sound OFF)	
•source, VCR1, VCR2, AV, tape:	5 Hz~50 kHz $\pm^{0}_{3}$ dB
•TV:	20 Hz~10 kHz $\pm^{0}_{1}$ dB
Maximum input voltage:	5.5 V
Dolby surround sound (delay time):	15 m sec~30 m sec

■ VIDEO SECTION (VCR1, VCR2, AV, TV)

Input voltage/input impedance:	1 Vp-p/75Ω
Maximum input voltage:	2 Vp-p
Output voltage (input: 1 Vp-p, load 75Ω unbalanced):	1 Vp-p

■ GENERAL

Power supply:	AC 120 V 60 Hz
Power consumption:	105 W
Dimensions (W×H×D):	430×86×249 mm (16 15/16"×3 3/8"×9 13/16")
Weight:	4.6 kg (10.1 lb)

Technics

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■ CONTENTS

	Page
• SAFETY PRECAUTION	2
• LOCATION OF CONTROLS	3, 4
• OPERATION	4, 5
• BASIC KNOWLEDGE OF DOLBY SURROUND	6
• DISASSEMBLY INSTRUCTIONS	7
• MEASUREMENTS AND ADJUSTMENT	8
• WIRING CONNECTION DIAGRAM	9, 10
• PRINTED CIRCUIT BOARDS	11 ~ 14
• RESISTORS AND CAPACITORS	14, 15
• SCHEMATIC DIAGRAM	16 ~ 20
• BLOCK DIAGRAM	21 ~ 23
• REPLACEMENT PARTS LIST	24
• EXPLODED VIEW	25, 26

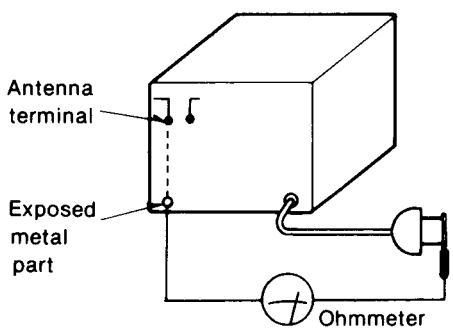
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

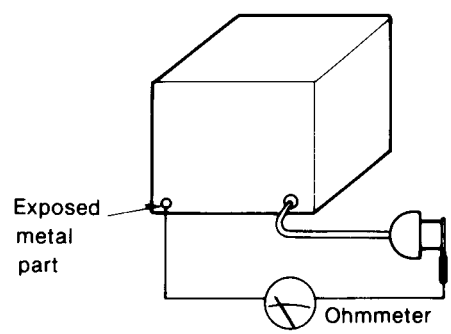
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



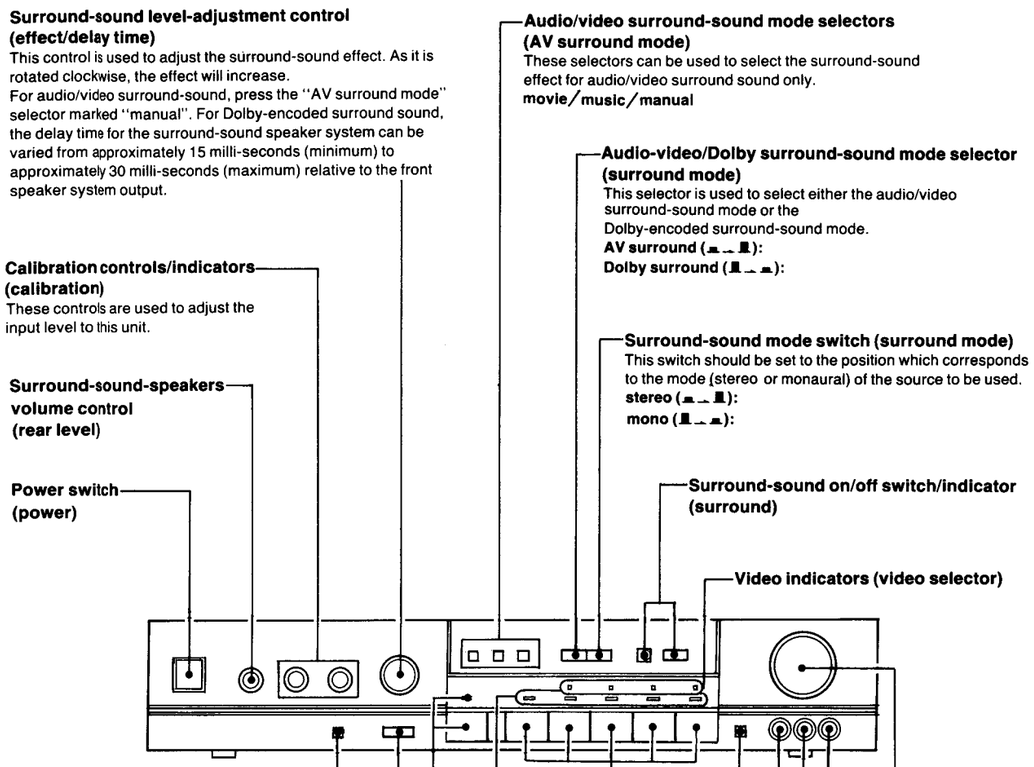
(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS

• Front view



Surround-sound level-adjustment control (effect/delay time)
This control is used to adjust the surround-sound effect. As it is rotated clockwise, the effect will increase.
For audio/video surround-sound, press the "AV surround mode" selector marked "manual". For Dolby-encoded surround sound, the delay time for the surround-sound speaker system can be varied from approximately 15 milli-seconds (minimum) to approximately 30 milli-seconds (maximum) relative to the front speaker system output.

Audio/video surround-sound mode selectors (AV surround mode)
These selectors can be used to select the surround-sound effect for audio/video surround sound only.
movie/music/manual

Audio-video/Dolby surround-sound mode selector (surround mode)
This selector is used to select either the audio/video surround-sound mode or the Dolby-encoded surround-sound mode.
AV surround (▃ ▁ ▇):
Dolby surround (▇ ▁ ▃):

Calibration controls/indicators (calibration)
These controls are used to adjust the input level to this unit.

Surround-sound mode switch (surround mode)
This switch should be set to the position which corresponds to the mode (stereo or monaural) of the source to be used.
stereo (▃ ▁ ▇):
mono (▇ ▁ ▃):

Surround-sound-speakers volume control (rear level)

Power switch (power)

Surround-sound on/off switch/indicator (surround)

Video indicators (video selector)

Bass-boost switch (bass boost)
Press inward (▇ ▁ ▃) to the "ON" position when listening at a low volume level.

Audio/video input selectors (audio/video input selector)
source/VCR1/VCR2/AV/TV

Volume control (master volume)

VCR 2 input terminals (VCR 2)

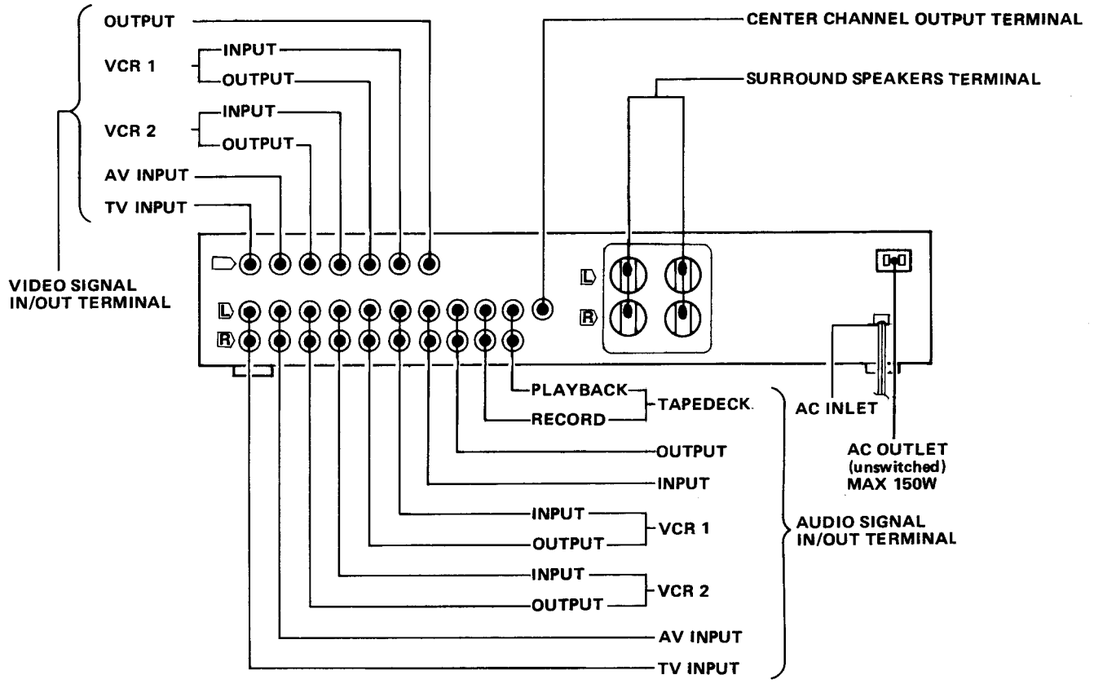
"Background-video" switch (BGV)
This switch is used to combine the sound from an audio source (such as a turntable, CD player, etc.) with a video source (such as a VCR, etc.). The desired video source can then be watched while listening to a separate audio source.
When this switch is set to the "on" position (▇ ▁ ▃), the video indicator corresponding to the video source selected will illuminate, and the audio/video input indicator marked "source" will illuminate.

Audio/video input indicators (audio/video input selector)

Tape-monitor switch/indicator (tape monitor)

VCR 2 input terminals selector (VCR 2)
This switch selects between the front and rear panel "VCR 2" terminals.
rear (▃ ▁ ▇): Set to this position to select video equipment connected to the rear panel terminals.
front (▇ ▁ ▃): Set to this position to select video equipment connected to the front panel terminals.

• Rear view

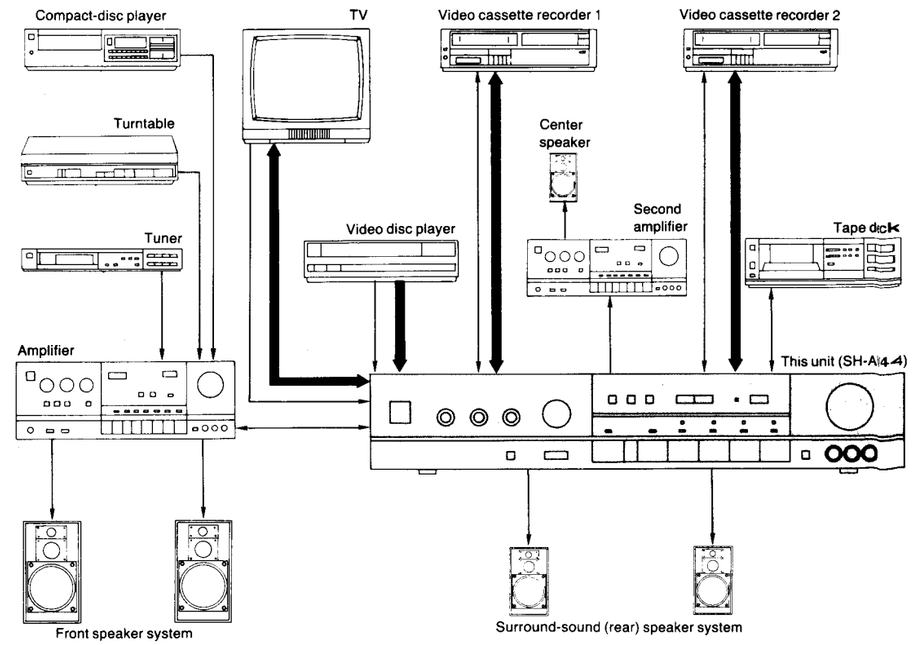


■ OPERATION

SYSTEM CONFIGURATION

The ⟶ arrows indicate the direction of flow of video signals
The ⟶ arrows indicate the direction of flow of audio signals

The various types of audio equipment and video equipment shown below can be connected to this unit. Be sure to carefully read the operation instructions for each component before operation, and then go on to enjoy a new and exciting world of audio and video pleasure.
(For detailed information concerning connections, see pages 6 and 7; for operation procedures, see pages 10 through 13.)



AUDIO/VIDEO SURROUND SOUND

1 **Switch ON (▁▂▃) after first setting the volume control on the amplifier and on this unit to the minimum position.**

2 **Select the desired AV surround mode.**

3 **Set to this position (▃▂▁) to listen to an AV source as selected in step 7.**
Press in (▁▂▃) to listen to an audio cassette tape.

4 **Set to "off" (▃▂▁).**

5 **Set to about "5".**

6 **Set to "0".**

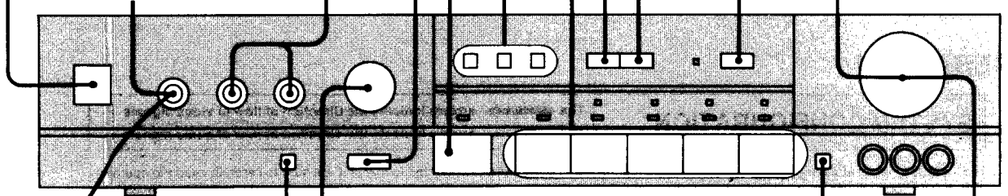
7 **Select the sound source.**

8 **Set to "AV surround" (▃▂▁).**

9 **Set to "stereo" (▃▂▁) or "mono" (▁▂▃).**

10 **Set to "on" (▁▂▃).**

11 **Set to about "14".**



Set to this position (▁▂▃) when listening at low volume levels.

Set to this position (▁▂▃) to use video equipment connected to the front panel "VCR 2" terminals as a video source.

15 **Adjust the surround-sound effect.**
Note: This control has no effect unless the "manual" AV surround mode was selected in Step 2.

14 **Adjust the volume level of the surround-sound speaker systems.**

13 **Use the volume control on the amplifier to adjust the volume level of the front speaker systems.**

12 **Begin operation of the audio and video components.**
(Refer to the operation instructions for each of the components.)

Amplifier	
If the amplifier has a recording mode selector	If the amplifier has a tape-monitor selector
•**(rec selector)** Use this switch when you listen to equipment connected to the amplifier. •**(Input selector)** "tape"	•**(tape monitor)** "tape" •**(Input selector)** Use this switch when you listen to equipment connected to the amplifier.

Speaker volume level adjustment

This control is used to simultaneously adjust the sound level of the front speaker system and the surround-sound (rear) speaker system.

■ BASIC KNOWLEDGE OF DOLBY SURROUND

• Dolby surround

• Dolby stereo record film for theaters is used for video tape and video disc as it is. And the effects for sound extension, presence, and movement can be attained for playback.

• Recording to movie film

• At road-show movie theaters, the movies are conventionally screened by 70mm magnetic 6-channel or 35mm magnetic 4-channel system, and the basic equipment can be used. Dolby stereo movies basically consist of the front 3 channels and rear (surround) 1 channel, totalling 4 channels.

• The information of 4 channels is changed to that of 2 channels through matrix treatment, and is optically recorded on 2 tracks of the film.

Rec Film Play
(4 → 2 → 4)

• Sound information is entered in the 2 channels of L and R. So, it can be recorded on video or video disk.

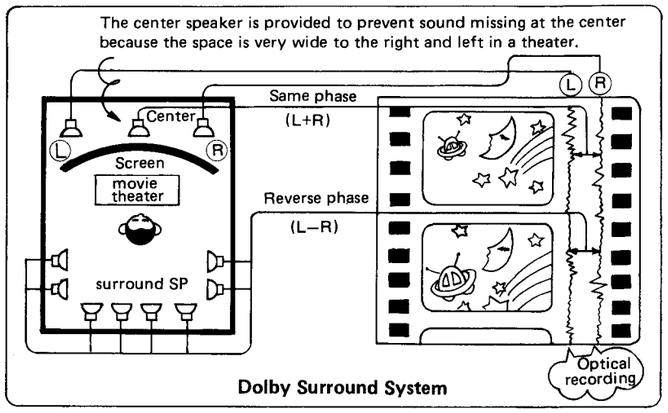
• Dolby stereo mark DOLBY SYSTEM

• Newly released records of VHD and VD are provided with dolby mark as shown upper since 1985.

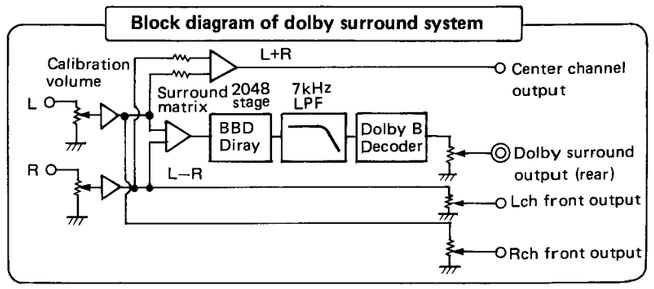
• Fundmentals of surround playback

• Surround information (L–R) is recorded on the right and left tracks of stereo in reverse phase.

• In a theater, listening positions are located in a wide range. So, the rear surround speaker is delayed as against the front to attain the directivity of main signal (front) thereby balancing the front and rear.



Dolby Surround System



(Necessity of calibration)

• To obtain the optimum effects of Dolby surround, there should be no level difference between L and R channels. The calibration is performed to balance the levels of L and R.

(Procedure for calibration)

E.g. playback of VHD with Dolby surround

① **Surround/Dolby select SW** ..... Select Dolby (press ▃)

② **Input select switch** ..... Play VHD with Dolby surround by Video disc.

③ **Left calibration knob** ..... Turn the calibration knob on L side so that the indicator above the knob lights up.

④ **Right calibration knob** ..... Turn the calibration knob on R side so that the indicator above the knob lights up.

⑤ **Amp. for front speaker** ..... Set the sound volume to "0" and operate the rear speaker (for surround) only.

⑥ **Surround mode button** ..... Press the button to select "monaural ▃ ".

⑦ **L or R calibration knob** ..... Turn one of the knobs so that the surround volume of VHD (sound from rear speaker) is minimized.

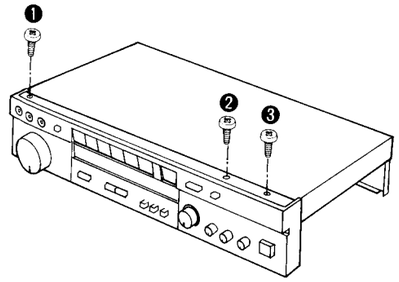
⑧ **Effect/delaytime knob** ..... Set it to the middle. With the knob set to Dolby position, it changed from effect to delaytime (adjust) knob, and the standard setting is 20ms (middle position). It can be changed in the range of 15ms ~ 30ms as needed.

⑨ **Surround mode button** ..... Press the button to select "stereo ▁ ". The optimum Dolby surround effect will be obtained.

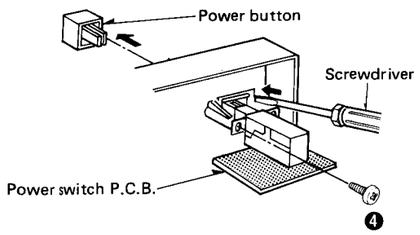
■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet
Procedure 1	• Remove the 5 screws and then remove the cabinet.

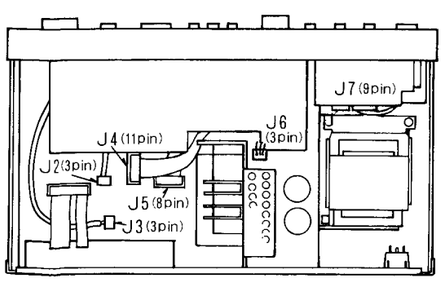
Ref. No. 2	How to remove the front panel
Procedure 1 →2	• Remove the 3 screws (❶ ~ ❸)



• Push out the power button with screwdriver.
• Remove the 1 screw (❹) and then remove the power switch P.C.B.

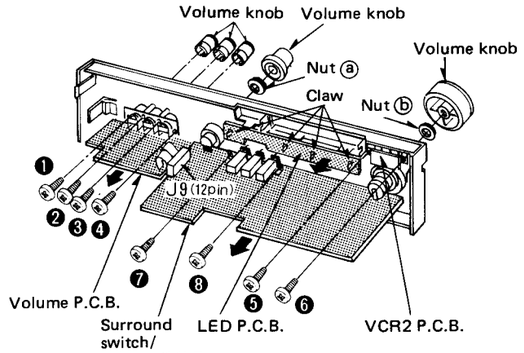


• Remove the 6 connectors (J2 ~ J7), and then remove the front panel.

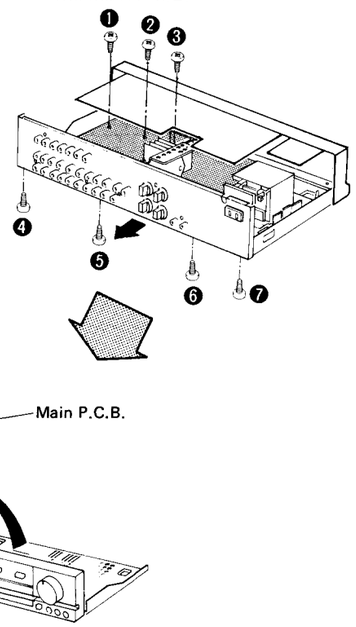


Ref. No. 3	How to remove the volume P.C.B., LED P.C.B., VCR 2 terminal P.C.B., and surround switch/volume P.C.B.
Procedure 1 →2 →3	

• Remove the 4 screws (❶ ~ ❹).
• Remove the 1 connector (J9).
• Pull up the 3 volume knobs and then remove the volume P.C.B..
• Remove the 4 claws and then remove the LED P.C.B.
• Remove the 2 screws (❺ , ❻) and then remove the VCR2 terminal P.C.B..
• Remove the 2 screws (❼ , ❽).
• Pull up the 2 volume knobs.
• Remove the 2 nuts (ⓐ , ⓑ), and then remove the surround switch/volume P.C.B..

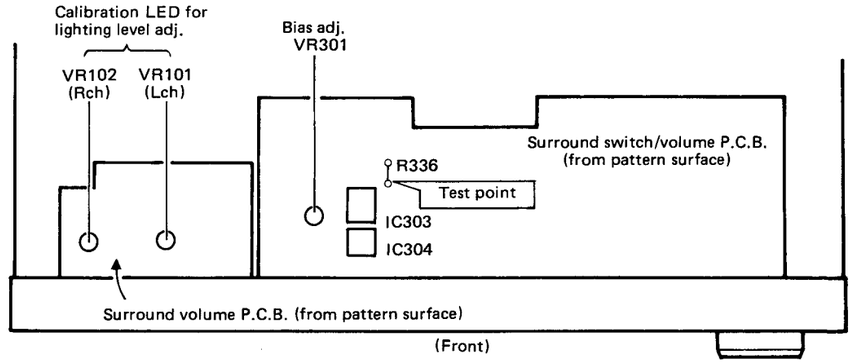


Ref. No. 4	How to remove the main P.C.B.
Procedure 1 →4	• Remove the 7 screws (❶ ~ ❼) • Remove the 6 connector (J2 ~ J7) and then remove the main P.C.B.



■ MEASUREMENTS AND ADJUSTMENTS

• Adjustment point



• Measuring instrument

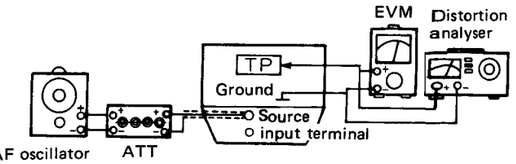
• EVM (Electronic voltmeter) • AF oscillator • ATT (Attenuator) • Distortion analyser

• Measurement condition

• Input selector ; source • Surround on/off switch ; on • Surround mode switch ; AV surround/stereo
• AV surround mode switch ; manual • Tape monitor switch ; off • BGV switch ; off
• Bass boost switch ; off • VCR 2 Input selector ; rear • each volume ; max

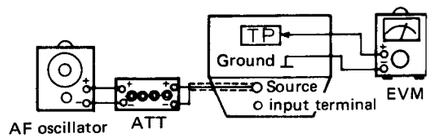
• BIAS ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Apply 400Hz signal from oscillator so that the output between TP and ground is 500mV.
3. Adjust VR301 so that the distortion is minimized.



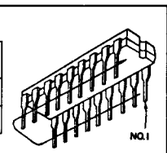
• CALIBRATION LED FOR LIGHTING LEVEL ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Apply 400Hz signal from oscillator so that the output between TP and ground is 500mV.
3. Adjust VR101 (Lch) [VR102 (Rch)] so that the calibration LED of L, R lights up.

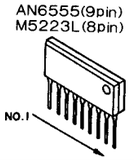


• TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

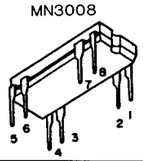
LC4066B	14pin
LC4066BH	
MN3101	8pin
SViNE646N	16pin



AN6555(9pin)
M5223L(8pin)

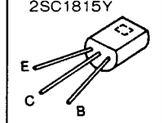


MN3008

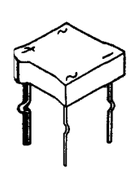


SViK4141-2M

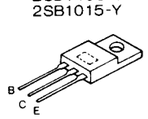
2SA722-S
2SC2878A-T
2SC1815Y



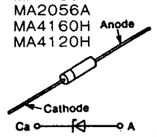
SVDS2VB20F1



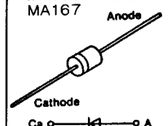
2SD1406-Y
2SB1015-Y



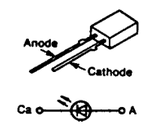
MA4150M
MA2056A
MA4160H
MA4120H



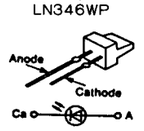
MA165. MA29WA
MA167



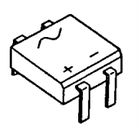
LN252RPH



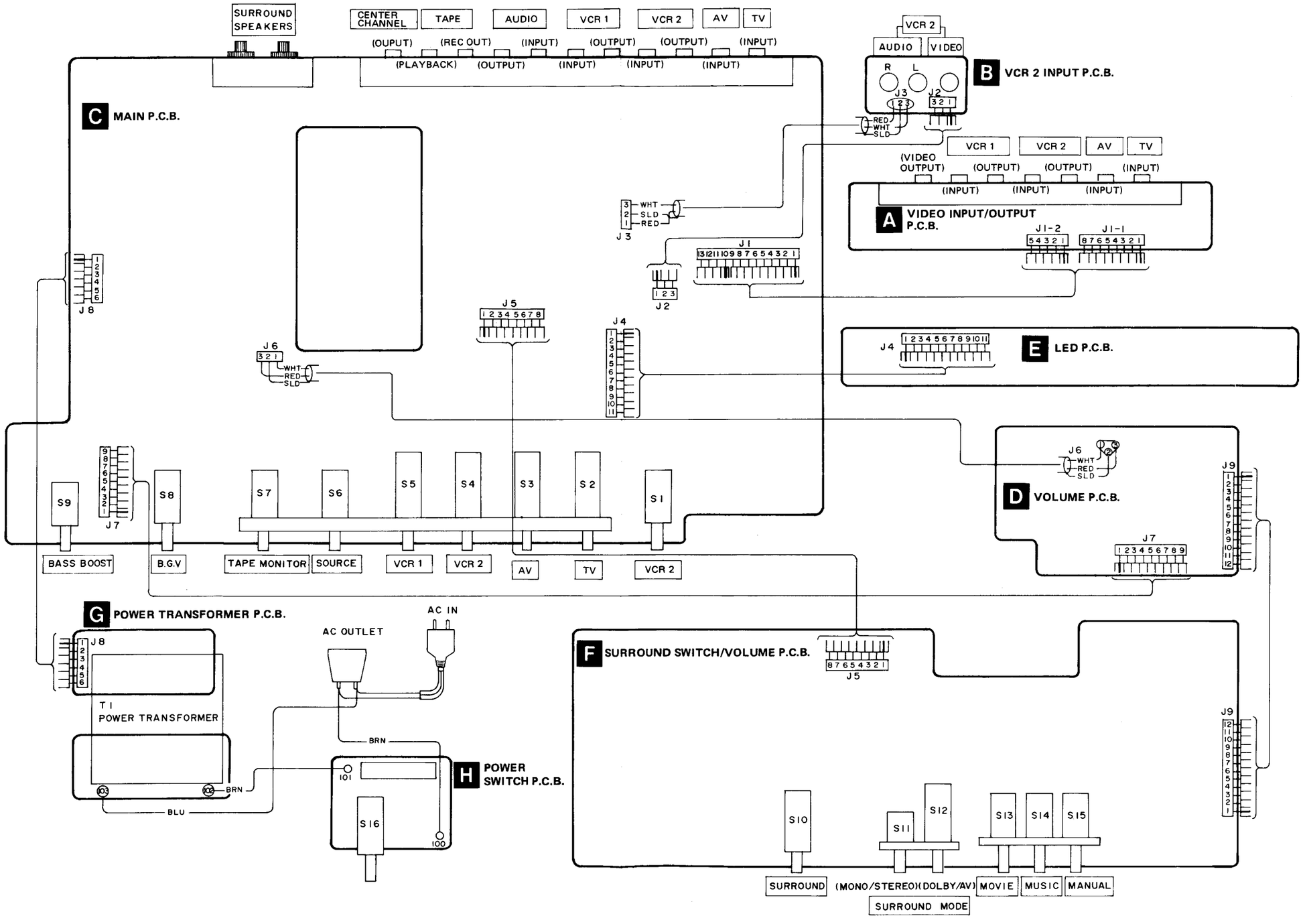
LN446WP
LN346WP



SVDS1WB40



■ WIRING CONNECTION DIAGRAM



■ PRINTED CIRCUIT BOARDS

TV (INPUT) | AV (INPUT) | VCR 2 (OUTPUT) (INPUT) | VCR 1 (OUTPUT) (INPUT) | AUDIO (INPUT) (OUTPUT) | TAPE/EXT (REC OUT) (PLAYBACK) | CENTER (OUTPUT) | SURROUND SPEAKERS

C MAIN P.C.B.

H POWER SWITCH P.C.B.

F1 125V 1.2A

POWER

E LED P.C.B.

Made in Japan

(TV IND.) (AV IND.) (VCR2 IND.)

TV (INPUT) | AV (INPUT) | VCR 2 (OUTPUT) (INPUT)

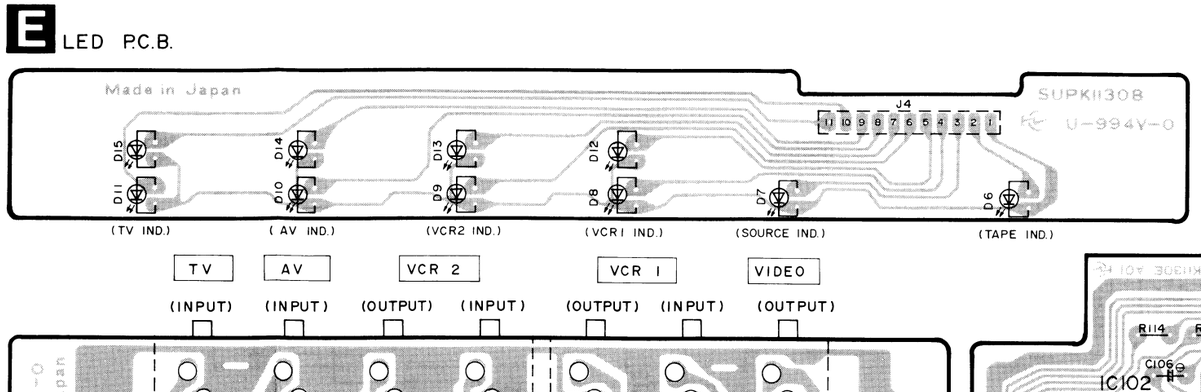
A VIDEO IN/OUT P.C.B.

F SURROUND SWITCH/VOLUME

VCR 2 | TV | AV | VCR 2 | VCR 1 | SOURCE | TAPE MONITOR | BGV | BASS BOOST | EFFECT/DELAY TIME

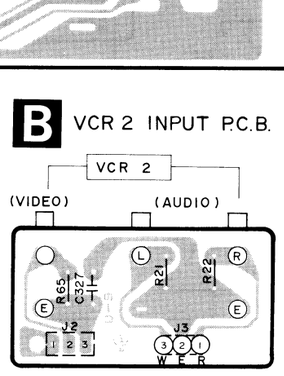
RROUND SPEAKERS

E LED P.C.B.

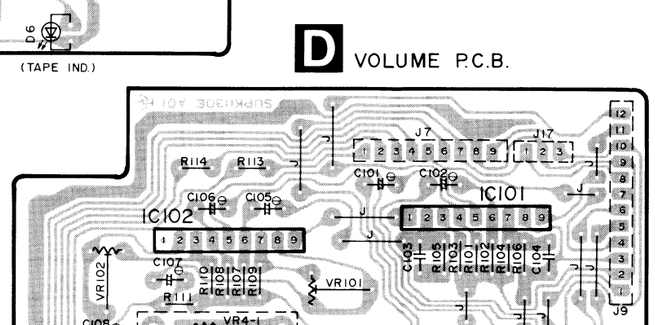


A VIDEO IN/OUT P.C.B.

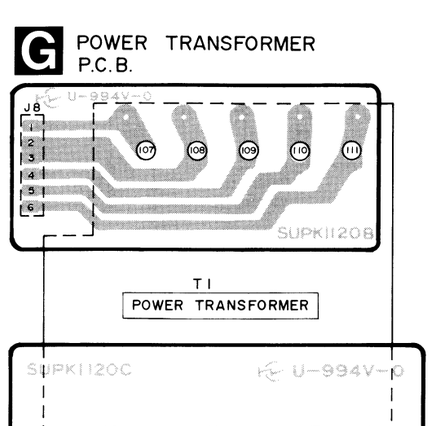
B VCR 2 INPUT P.C.B.



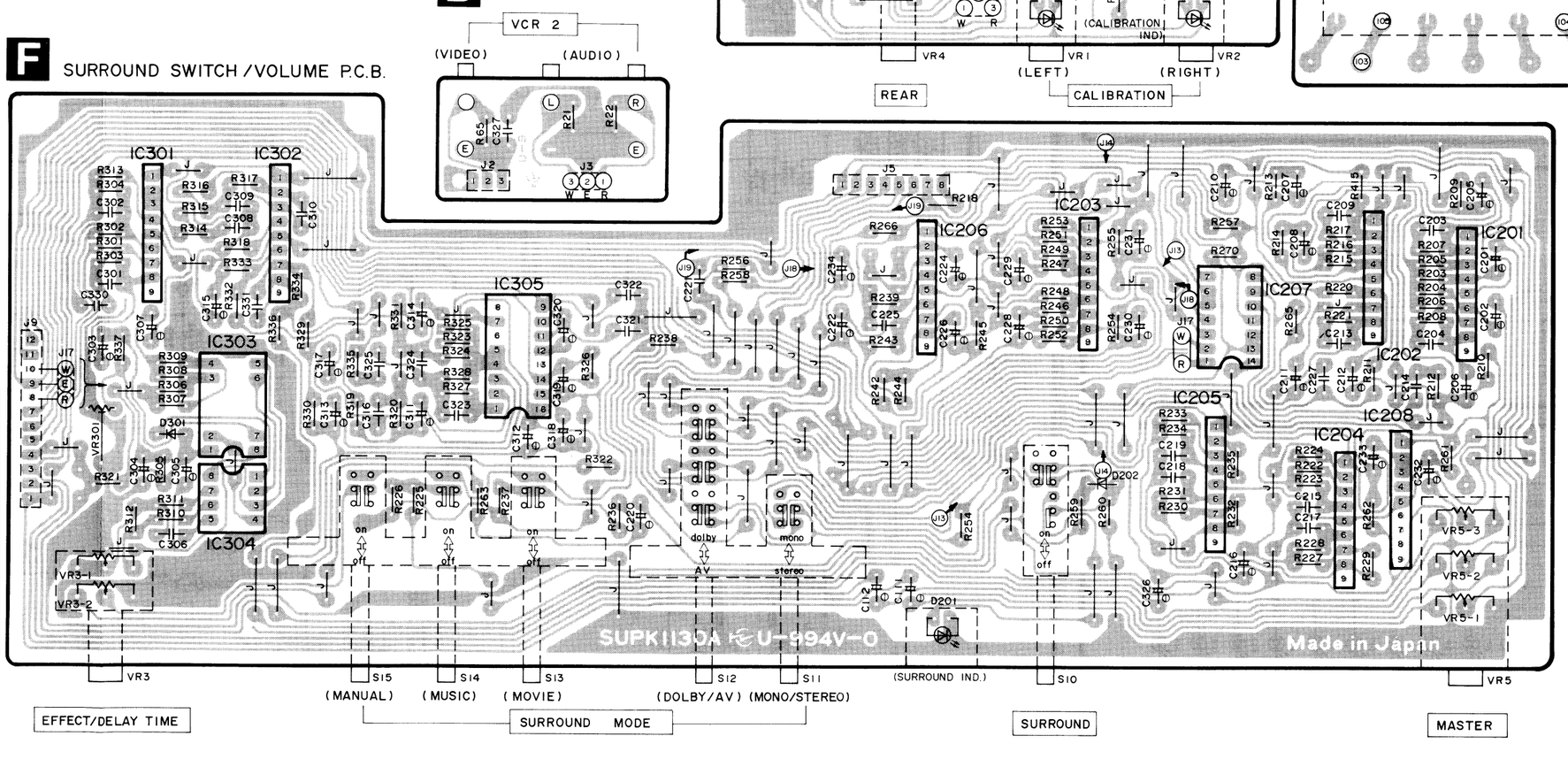
D VOLUME P.C.B.

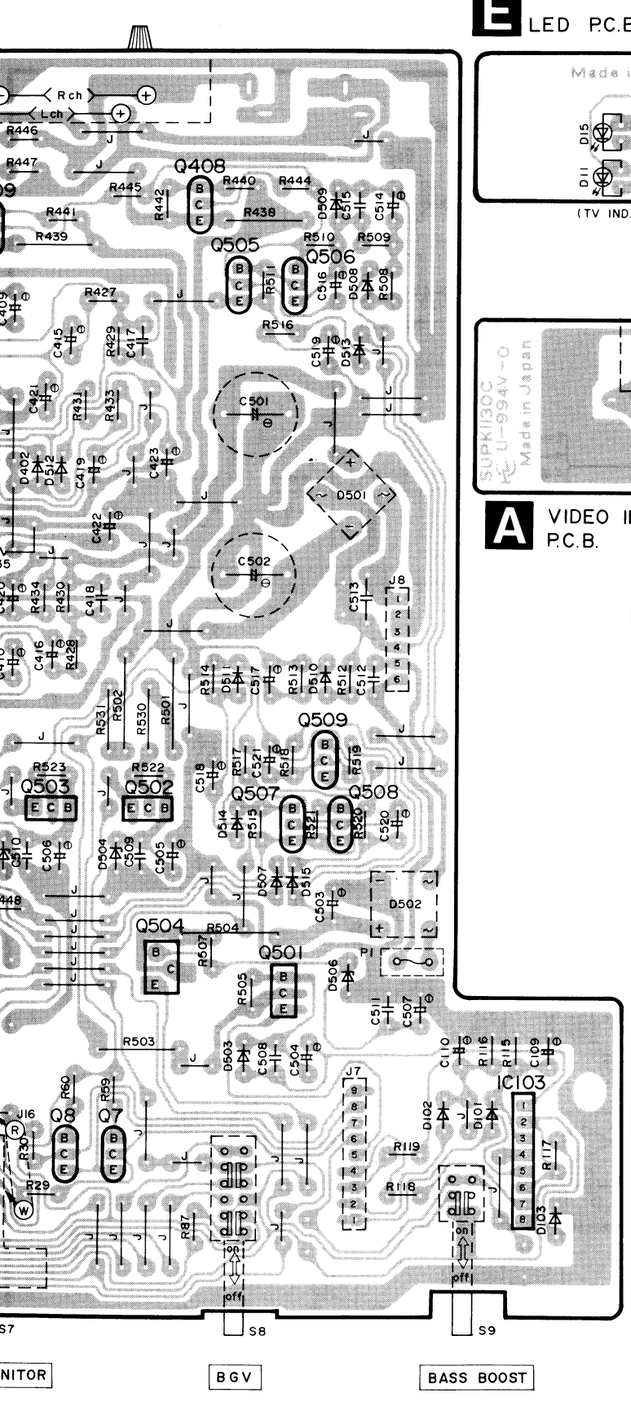


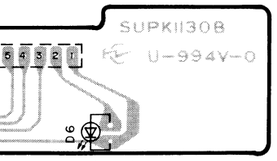
G POWER TRANSFORMER P.C.B.



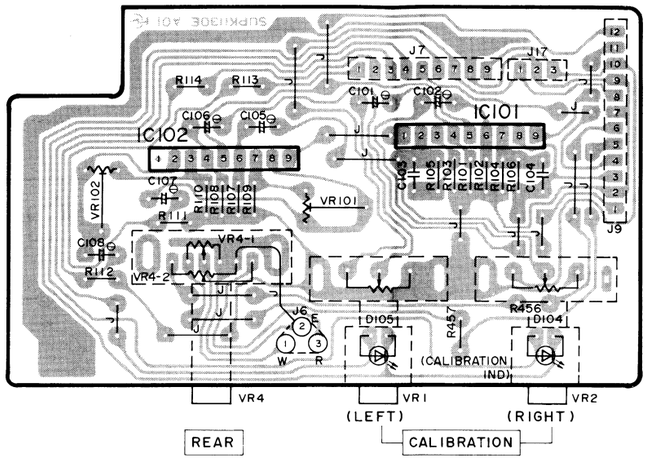
F SURROUND SWITCH /VOLUME P.C.B.



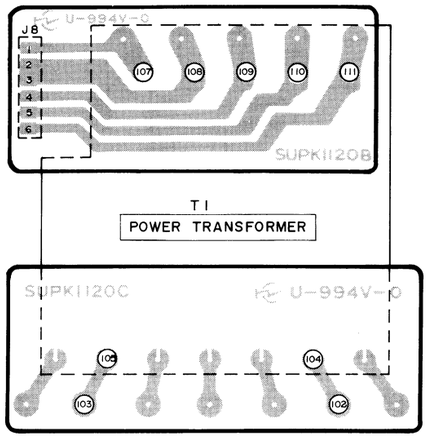




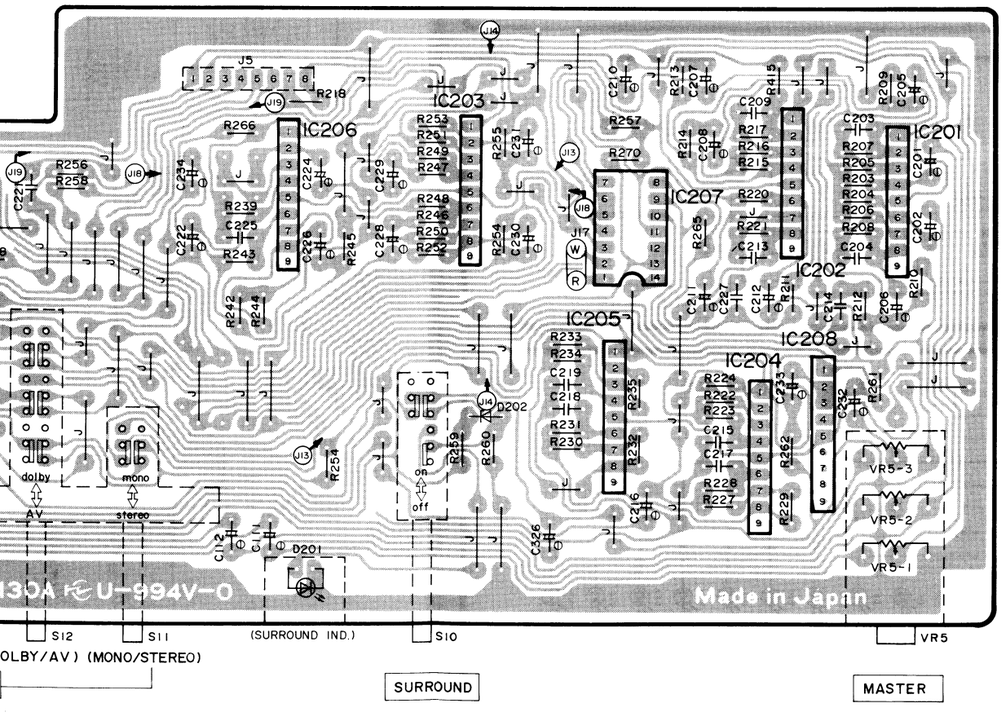
D VOLUME P.C.B.



G POWER TRANSFORMER P.C.B.



T1
POWER TRANSFORMER



■ RESISTORS & CAPACITORS

Notes:
- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
- Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
- The unit of resistance is Ω (ohm). K = 1000Ω, M = 1000kΩ
- The unit of capacitance is μF (microfarad). P = 10^{-6} μF
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Resistor Type	Wattage	Tolerance
ERD : Carbon	10 : 1/8W	G : ± 2%
ERO : Metal Film	S2 : 1/4W	J : ± 5%
ERG : Metal Oxide	25 : 1/4W	K : ± 10%
ERX : Metal Oxide	S1 : 1/2W	

ERD10TLJ□□□ ⟶ Chip type carbon

Capacitor Type		Voltage		Tolerance
		ECEA Type	Other	
ECE	Electrolytic	0J : 6.3V	1H : 50V	C : ± 0.25pF
ECC	Ceramic	1A : 10V	KC : 400V AC	J : ± 5%
ECK	Ceramic	1C : 16V		K : ± 10%
ECQP	Polypropylene	1E : 25V		Z : +80%, −20%
ECGN	Ceramic	1H : 50V		P : +100%, −0%
ECFTD	Semiconduction			
ECQ	Polyester			

RESISTORS

Ref.No.	Part No.	Value
R1,2	ERDS2TJ104	100K
R3,4	ERDS2TJ104	100K
R5,6	ERDS2TJ104	100K
R7,8	ERDS2TJ104	100K
R9,10	ERDS2TJ104	100K
R11,12	ERDS2TJ104	100K
R13,14	ERDS2TJ104	100K
R15,16	ERDS2TJ104	100K
R17,18	ERDS2TJ104	100K
R19,20	ERDS2TJ104	100K
R21,22	ERDS2TJ104	100K
R23,24	ERDS2TJ102	1K
R25,26	ERDS2TJ102	1K
R29,30	ERDS2TJ102	1K
R31,32	ERDS2TJ102	1K
R33,34	ERDS2TJ102	1K
R41,42	ERDS2TJ104	100K
R43,44	ERDS2TJ104	100K
R45,46	ERDS2TJ104	100K
R47,48	ERDS2TJ104	100K
R49,50	ERDS2TJ104	100K
R51,52	ERDS2TJ104	100K
R53,54	ERDS2TJ104	100K
R55,56	ERDS2TJ104	100K
R57,58	ERDS2TJ332	3.3K
R59,60	ERDS2TJ222	2.2K
R61,62	ERDS2TJ820	82
R63,64	ERDS2TJ820	82
R65,66	ERDS2TJ820	82
R67,68	ERDS2TJ820	82
R69,70	ERDS2TJ681	680
R71	ERDS2TJ681	680
R72,73	ERDS2TJ270	27
R74	ERDS2TJ270	27
R75,76	ERG1ANJ151	150
R77	ERG1ANJ151	150

Ref.No.	Part No.	Value
R78,79	ERDS2TJ272	2.7K
R80	ERDS2TJ272	2.7K
R81	ERD2FCJ4R7	4.7
R82	ERDS2TJ122	1.2K
R83	ERDS2TJ181	180
R84	ERDS2TJ561	560
R85	ERDS2TJ102	1K
R86	ERDS2TJ391	390
R87,88	ERDS2TJ271	270
R89	ERDS2TJ271	270
R90	ERDS2TJ472	4.7K
R91,92	ERDS2TJ102	1K
R93,94	ERDS2TJ104	100K
R95,96	ERDS2TJ104	100K
R101,102	ERDS2TJ104	100K
R103,104	ERDS2TJ103	10K
R105,106	ERDS2TJ223	22K
R107,108	ERDS2TJ104	100K
R109,110	ERDS2TJ182	1.8K
R111,112	ERDS2TJ104	100K
R113,114	ERDS2TJ102	1K
R115,116	ERDS2TJ104	100K
R117	ERDS2TJ103	10K
R118,119	ERDS2TJ102	1K
R203,204	ERDS2TJ104	100K
R205,206	ERDS2TJ103	10K
R207,208	ERDS2TJ103	10K
R209,210	ERDS2TJ104	100K
R211,212	ERDS2TJ123	12K
R213	ERDS2TJ104	100K
R214	ERDS2TJ104	100K
R215	ERDS2TJ104	100K
R216	ERDS2TJ103	10K
R217	ERDS2TJ223	22K
R218	ERDS2TJ104	100K
R220,221	ERDS2TJ333	33K

Ref.No.	Part No.	Value
R222,223	ERDS2TJ223	22K
R224	ERDS2TJ223	22K
R225	ERDS2TJ682	6.8K
R226	ERDS2TJ152	1.5K
R227,228	ERDS2TJ223	22K
R229,230	ERDS2TJ223	22K
R231,232	ERDS2TJ223	22K
R233,234	ERDS2TJ223	22K
R235	ERDS2TJ223	22K
R236,237	ERDS2TJ332	3.3K
R238	ERDS2TJ392	3.9K
R239	ERDS2TJ104	100
R242,243	ERDS2TJ223	22K
R244	ERDS2TJ223	22K
R245	ERDS2TJ104	100K
R246,247	ERDS2TJ103	10K
R248,249	ERDS2TJ332	3.3K
R250,251	ERDS2TJ332	3.3K
R252,253	ERDS2TJ103	10K
R254,255	ERDS2TJ104	100K
R256	ERDS2TJ182	1.8K
R257	ERDS2TJ104	100K
R258	ERDS2TJ472	4.7K
R259	ERDS2TJ562	560
R260	ERDS2TJ331	330
R261,262	ERDS2TJ104	100K
R263	ERDS2TJ392	3.9K
R264	ERDS2TJ103	10K
R265,266	ERDS2TJ104	100K
R270	ERDS2TJ104	100K
R301,302	ERDS2TJ683	68K
R303,304	ERDS2TJ683	68K
R305	ERDS2TJ472	4.7K
R306,307	ERDS2TJ104	100K
R308,309	ERDS2TJ332	3.3K
R310	ERDS2TJ683	68K
R311	ERDS2TJ273	27K
R312	ERDS2TJ474	470K

Ref.No.	Part No.	Value
R313	ERDS2TJ104	100K
R314,315	ERDS2TJ822	8.2K
R316	ERDS2TJ822	8.2K
R317	ERDS2TJ153	15K
R318	ERDS2TJ104	100K
R319	ERDS2TJ272	2.7K
R320	ERDS2TJ102	1K
R321	ERDS2TJ151	150
R322	ERDS2TJ101	100
R323,324	ERDS2TJ472	4.7K
R325	ERDS2TJ184	180K
R326	ERDS2TJ274	270K
R327	ERDS2TJ473	47K
R328	ERDS2TJ332	3.3K
R329	ERDS2TJ333	33K
R330,331	ERDS2TJ104	100K
R332	ERDS2TJ683	68K
R333,334	ERDS2TJ223	22K
R335	ERDS2TJ181	180
R336	ERDS2TJ102	1K
R337	ERDS2TJ473	47K
R401,402	ERDS2TJ103	10K
R403,404	ERDS2TJ472	4.7K
R405,406	ERDS2TJ103	10K
R407,408	ERDS2TJ104	100K
R409,410	ERDS2TJ472	4.7K
R411,412	ERDS2TJ103	10K
R413,414	ERDS2TJ104	100K
R415	ERDS2TJ102	1K
R416,417	ERDS2TJ102	1K
R418,419	ERDS2TJ222	2.2K
R420,421	ERDS2TJ222	2.2K
R422	ERDS2TJ222	2.2K
R423,424	ERDS2TJ561	560
R425,426	ERDS2TJ683	68K
R427,428	ERDS2TJ122	1.2K

Ref.No.	Part No.	Value
R429,430	ERDS2TJ683	68K
R431,432	ERDS2TJ222	2.2K
R433,434	ERDS2TJ272	2.7K
⚠ R435	ERD2FCG820	82
R436	ERDS2TJ102	1K
R437	ERDS2TJ223	22K
R438,439	ERX1ANJR22	0.22
R440,441	ERDS2TJ332	3.3K
R442,443	ERDS2TJ332	3.3K
R444,445	ERDS2TJ183	18K
R446,447	ERDS1FJ120	12
R448,449	ERDS2TJ104	100K
R451,452	ERDS2TJ222	2.2K
R453,454	ERDS2TJ102	1K
R455,456	ERDS2TJ102	1K
R457	ERDS2TJ102	1K
⚠ R501,502	ERG1SJ560	56
⚠ R503	ERG2SJ221	220
⚠ R504	ERG3SJ100	10
R505	ERDS2TJ152	1.5K
R507	ERDS2TJ102	1K
R508,509	ERDS2TJ222	2.2K
R510,511	ERDS2TJ153	15K
R512	ERDS2TJ102	1K
R513	ERDS2TJ332	3.3K
R514	ERDS2TJ473	47K
R515	ERDS2TJ562	5.6K
R516	ERDS2TJ394	390K
R517	ERDS2TJ473	47K
R518	ERDS2TJ104	100K
R519	ERDS2TJ332	3.3K
R520	ERDS2TJ562	5.6K
R521	ERDS2TJ103	10K
R522,523	ERDS2TJ152	1.5K
R530,531	ERD2FCG220	22

CAPACITORS

Ref.No.	Part No.	Value
C1,2	ECEA0JU101	100
C3	ECEA0JU330	33
C4	ECEA0JU101	100
C5,6	ECEA0JU471	470
C7	ECEA0JU471	470
C8,9	ECKD1H681KB	680P
C10	ECKD1H681KB	680P
C11	ECEA1CU101	100
C12,13	ECEA0JU470	47
C14,15	ECKD1H103ZF	0.01
C17	ECKD1H103ZF	0.01
C101,102	ECEA1HU010	1
C103,104	ECCD1H101K	100P
C105,106	ECEA1HU010	1
C107	ECEA1CU100	10
C108	ECEA1CK100	10
C109,110	ECEA1CU100	10
C111,112	ECEA1HU010	1
C201,202	ECEA1HU010	1
C203,204	ECCD1H101K	100P
C205,206	ECEA1CU100	10

Ref.No.	Part No.	Value
C207,208	ECEA1EU3R3	3.3
C209	ECCD1H101K	100P
C210	ECEA1CU100	10
C211,212	ECEA1EU3R3	3.3
C213	ECCD1H101K	100P
C214	ECFTD102KXL	0.001
C215	ECFTD683KXL	0.068
C216	ECEA1EU3R3	3.3
C217,218	ECFTD183KXL	0.018
C219	ECFTD152KXL	0.0015
C220	ECEA1CU100	10
C221	ECFTD183KXL	0.018
C222	ECEA1EU3R3	3.3
C225	ECFTD332KXL	0.0033
C226	ECEA1CU100	10
C227	ECFTD823KXL	0.082
C228,229	ECEA1EU3R3	3.3
C230,231	ECEA1CU100	10
C232	ECEA1HU010	1
C233,234	ECEA1CU100	10

Ref.No.	Part No.	Value
C301,302	ECCD1H101K	100P
C303	ECEA1HU010	1
C304	ECEA1AU470	47
C305	ECEA1CU221	220
C306	ECCD1H390K	39P
C307	ECEA1HU010	1
C308	ECFTD562KXL	0.0056
C309	ECFTD472KXL	0.0047
C310	ECKD1H471KB	470P
C311	ECEA1HU010	1
C312	ECEA1CU470	47
C313	ECEA1CU101	100
C314,315	ECEA1HU010	1
C316	ECKD1H471KB	470P
C317	ECEA1HU010	1
C318	ECEA1HUR33	0.33
C319	ECEA1HU0R1	0.1
C320	ECEA1CU100	10
C321	ECQM1H103KV	0.01
C322	ECQM1H473KV	0.047

Ref.No.	Part No.	Value
C323	ECQM1H472KV	0.0047
C324	ECQM1H273KV	0.027
C325	ECQM1H562KV	0.0056
C326	ECEA1CU100	10
C327	ECKD1H223ZF	0.022
C330	ECFTD473KXL	0.047
C331	ECKD1H331KB	330
C402	ECEA1HU010	1
C403,404	ECFTD563KXL	0.056
C405,406	ECCD1H101K	100P
C407,408	ECEA1CU100	10
C409,410	ECEA1HU010	1
C411,412	ECCD1H101K	100P
C413,414	ECCD1H101K	100P
C415,416	ECEA1CU100	10
C417,418	ECCD1H100F5	10P
C419,420	ECEA1HU100	10
C421,422	ECEA1VU470	47
C423	ECEA1VU101	100
C424,425	ECKD1H223ZF	0.022
C427	ECKD1H223ZF	0.022

Ref.No.	Part No.	Value
C501,502	ECET40S472SW	4700
C503	ECEA1EU471	470
C504	ECEA1EU101	100
C505,506	ECEA1CU101	100
C507	ECEA1EU471	470
C508,509	ECKD1H103ZF	0.01
C510,511	ECKD1H103ZF	0.01
C512	ECKD1H103ZF	0.01
C513	ECKD2H103ZF7	0.01
C514	ECEA1HU010	1
C515	ECKD1H103ZF	0.01
C516	ECEA1HU2R2	2.2
C517	ECEA1VU3R3	3.3
C518	ECEA1CU101	100
C519	ECEA1CU100	10
C520	ECEA1EU221	220
C521	ECEA1CU100	10
C522,523	ECEA1CU470	47
C1001	ECKDKC103PF2	0.01

■ SCHEMATIC DIAGRAM

A VIDEO IN/OUT CIRCUIT

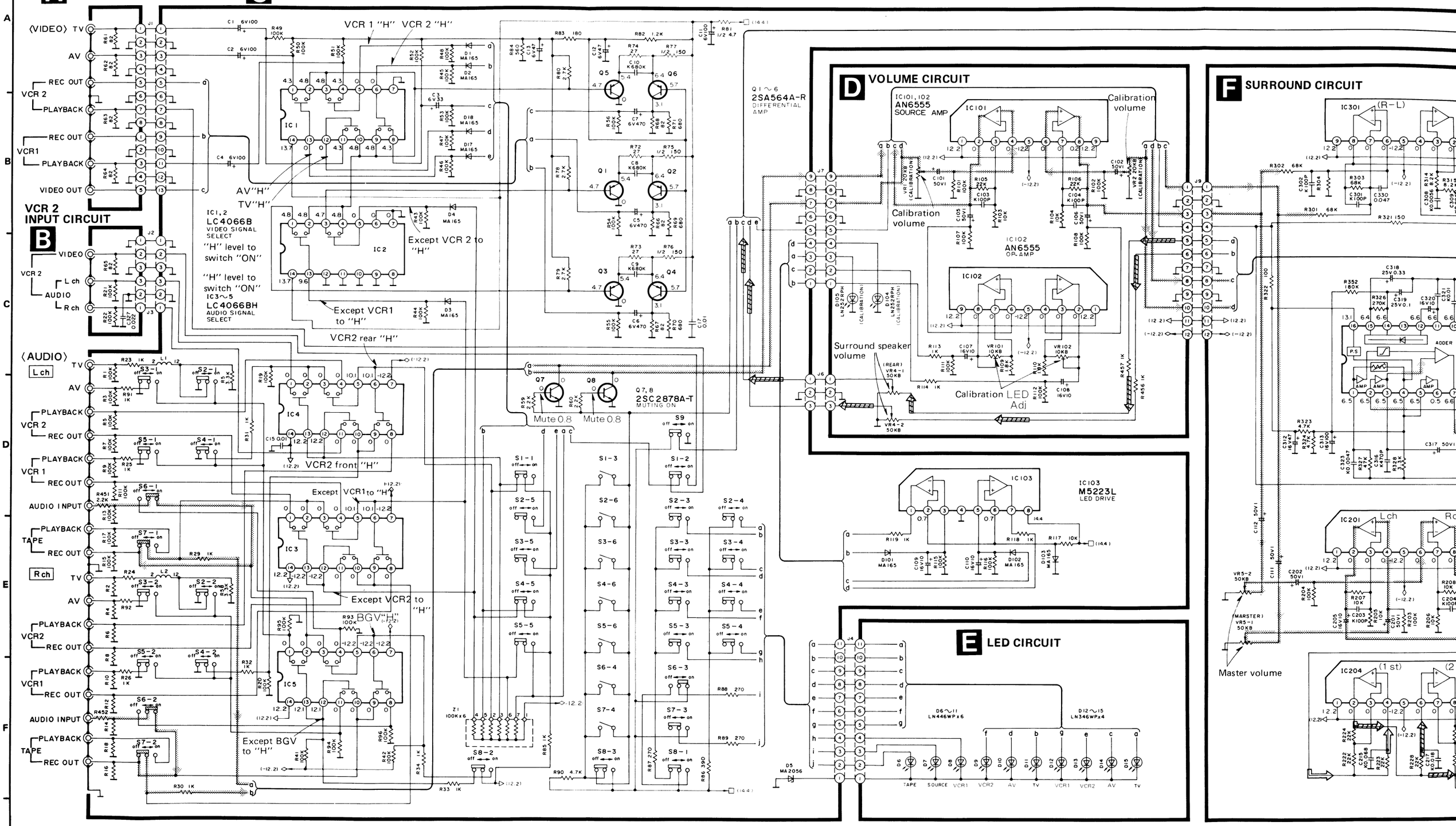
C MAIN CIRCUIT

B VCR 2 INPUT CIRCUIT

D VOLUME CIRCUIT

E LED CIRCUIT

F SURROUND CIRCUIT



LUME CIRCUIT

IC101, 102
AN6555
SOURCE AMP

IC101

Calibration volume

VR101 20KB (CALIBRATION)

Calibration volume

IC102
AN6555
OP-AMP

IC102

Calibration LED Adj

VR4-2 50KB

IC103
M5223L
LED DRIVE

E LED CIRCUIT

D6~11
LN446WPx6

D12~15
LN346WPx4

TAPE SOURCE VCR1 VCR2 AV TV VCR1 VCR2 AV TV

F SURROUND CIRCUIT

IC301
AN6555
MIXING/BUFFER AMP

IC303
MN3008
DELAY

IC303
BBD
2048 shift

IC304
MN3101
BBD CLOCK

VDD
OSC
frequency ½
wavefrom
clock driver

Surround level volume (display time)

VR3-1 100KB (EFFECT/DELAY TIME)

Bias adj.

IC305
SVINE646N
DOLBY NR

ADDER

IC302
AN6555
INVERTER/OP AMP

VR5-3 50KB (MASTER)

Master volume

IC207
LC4066BH
STEREO/MONO SELECT

MONO"H"

STEREO"H"

MONO "H"

φ(R-L) signal

IC208
AN6555
BUFFER AMP

S10-1 S10-2 S10-3 on ⟷ off

D202 RD6.8EB

D201 LN2552RPH (SURROUND IND.)

S11-1 S11-2 stereo ⟷ mono

S12-1 S12-2 S12-3 S12-4 S12-5 AV ⟷ Dolby

IC203
AN6555
MIXING AMP

R-φ(R-L) signal

L+φ(R-L) signal

(MOVIE) S13 (MUSIC) S14 (MANUAL) S15 on ⟷ off

IC201
AN6555
MIXING AMP

IC201 Lch Rch

VR5-2 50KB (MARSTER)

Master volume

IC202
AN6555
L,R MIXING AMP

IC202 (R+L) (R-L)

IC203 R-φ (R-L) L+φ (R-L)

IC204
AN6555
PHASE SHIFT

IC204 (1st) (2nd)

(R-L) signal

φ(R-L) signal

IC205
AN6555
PHASE SHIFT

IC205 (3rd) (4th)

(R+L) signal

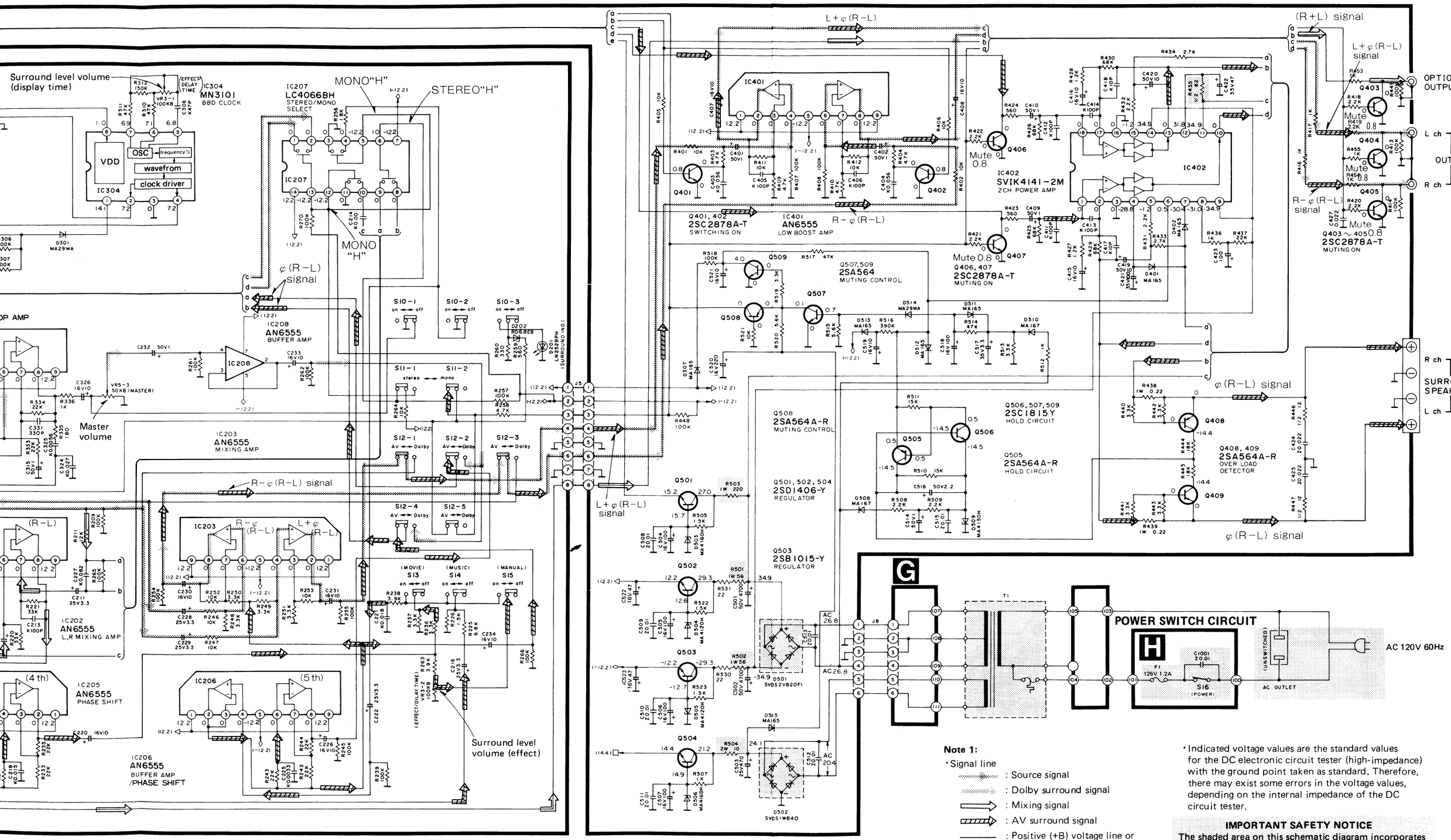
IC206
AN6555
BUFFER AMP /PHASE SHIFT

IC206 (5th)

(EFFECT/DILAY TIME) VR3-2 100KB

Surround level volume (effect)

φ(R-L) signal



Note 1:

- Signal line
  - : Source signal
  - : Dolby surround signal
  - : Mixing signal
  - : AV surround signal
  - : Positive (+B) voltage line or negative (−B) voltage line

- Indicated voltage values are the standard values for the DC electronic circuit tester (high-impedance) with the ground point taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.

IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing, it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

■ BLOCK DIAGRAM

Note 2:

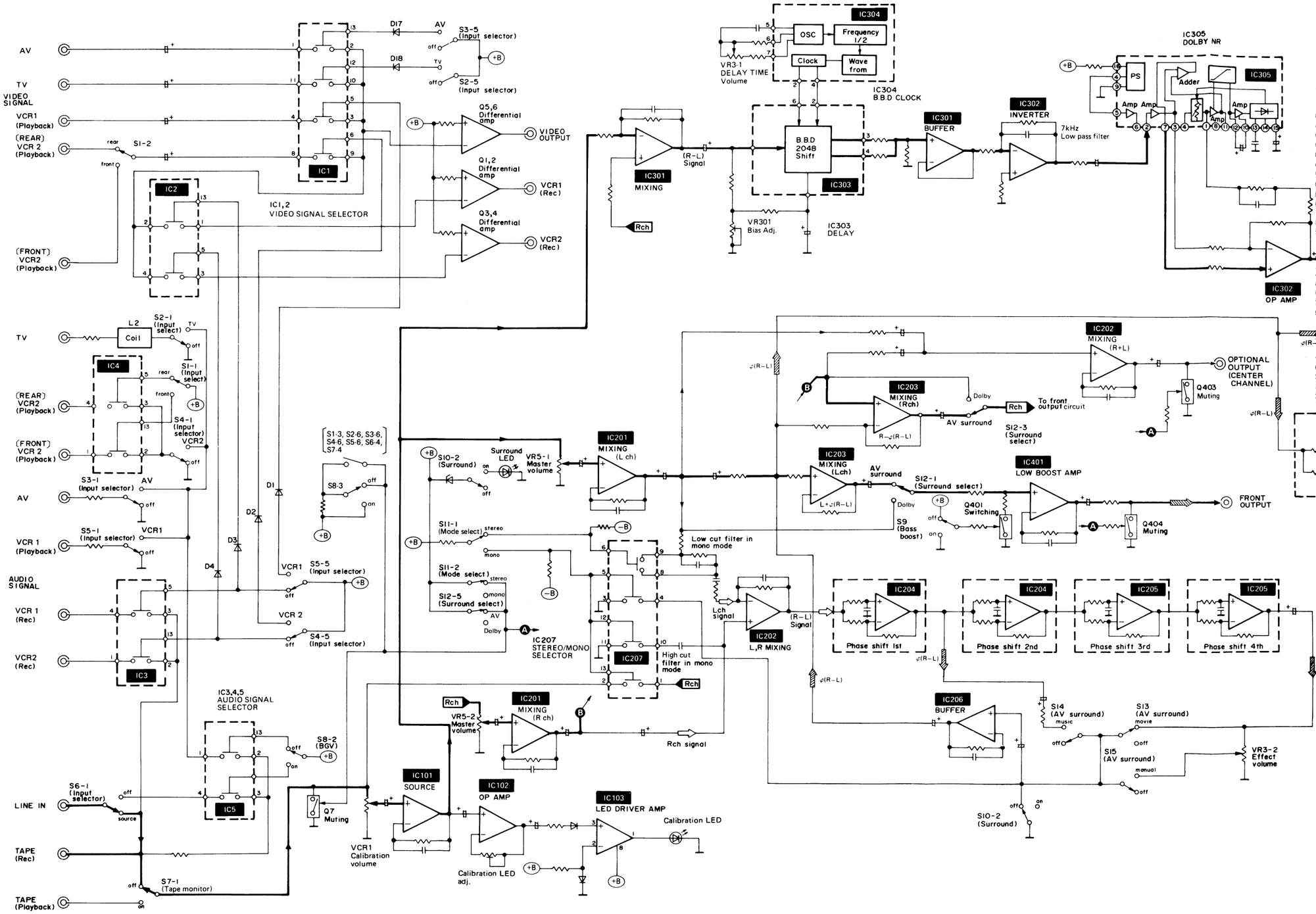
- **S1-1 ~ 1-3** : VCR2 input select switch in **"rear"** position.
- **S2 ~ 6** : Input select switch in **"source"** position.
  [S2-1 ~ 2-6: TV, S3-1 ~ 3-6: AV,
  S4-1 ~ 4-6: VCR2, S5-1 ~ 5-6: VCR1,
  S6-1 ~ 6-4: Source]
- **S7-1 ~ 7-3** : Tape monitor switch in **"off"** position.
- **S8-1 ~ 8-3** : BGV switch in **"off"** position.
- **S9** : Bass boost switch in **"off"** position.
- **S10-1 ~ 10-3** : Surround on/off switch in **"off"** position.
- **S11, 12** : Surround mode switch in **"AV surround stereo"** position.
  S11-1, 11-2: Stereo/mono,
  S12-1 ~ 12-5: AV surround/Dolby surround.
- **S13 ~ 15** : AV surround mode switch in **"movie"** position (S13: movie, S14: music, S15: manual)
- **S16** : Power switch in **"on"** position.

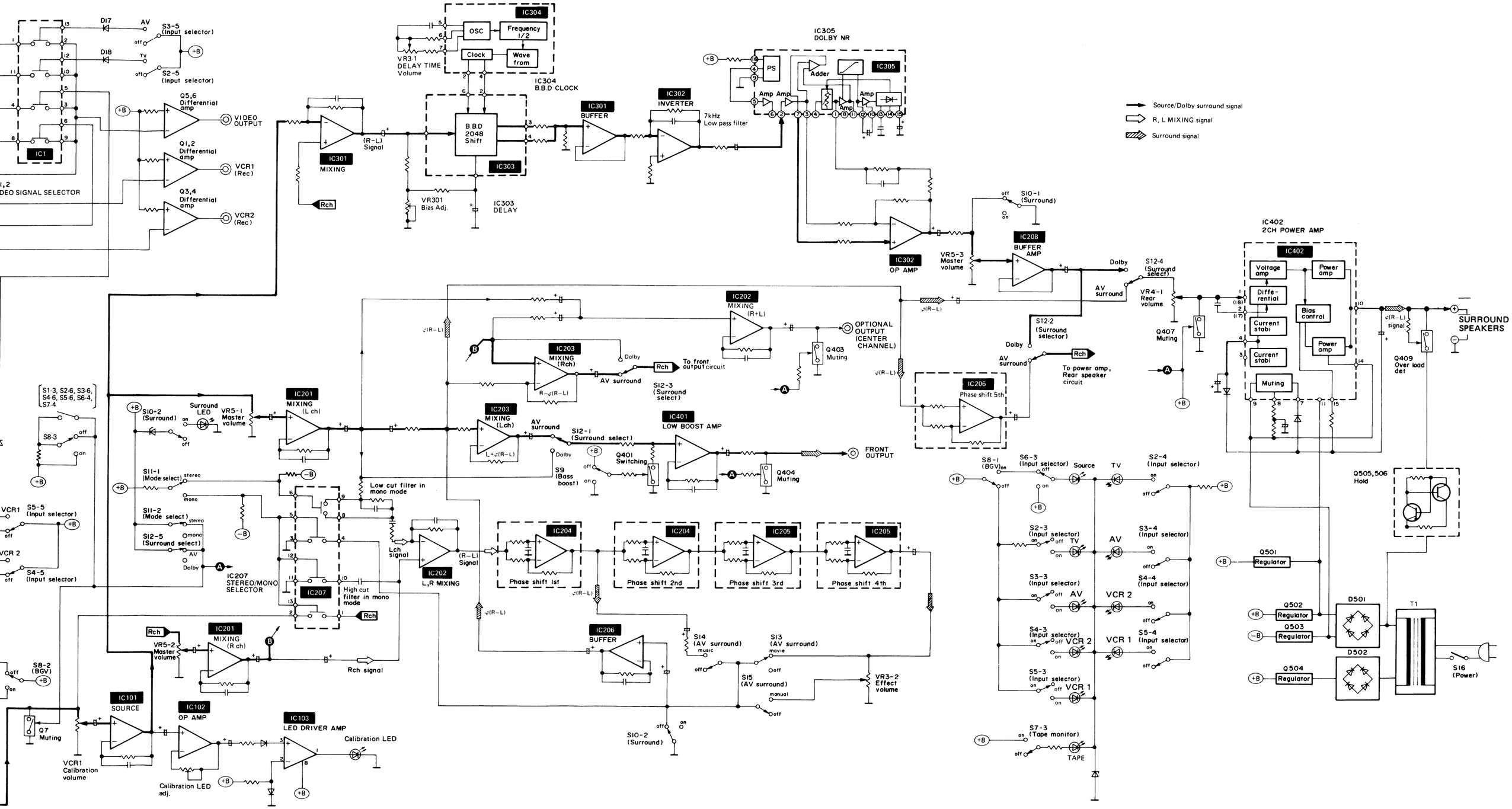
*** Caution !**

IC and LSI are sensitive to static electricity.
Secondary trouble can be prevented by taking care during repair.

* Cover the parts boxes mode of plastics with aluminum foil.
* Ground the soldering iron.
* Put a conductive mat on the work table.
* Do not touch the legs of IC or LSI with the fingers directly.

Original Part No.	Supply Part No.
2SA564A–R	2SC722–S




IC1
1,2 DEO SIGNAL SELECTOR
DI7
AV
S3-5 (Input selector)
DI8
TV
S2-5 (Input selector)
Q5,6 Differential amp
VIDEO OUTPUT
Q1,2 Differential amp
VCR1 (Rec)
Q3,4 Differential amp
VCR2 (Rec)
IC304
OSC
Frequency 1/2
Clock
Wave from
VR3-1 DELAY TIME Volume
IC304 B.B.D CLOCK
IC303 B.B.D 2048 Shift
IC303 DELAY
VR301 Bias Adj.
IC301 MIXING
(R-L) Signal
Rch
IC301 BUFFER
IC302 INVERTER
7kHz Low pass filter
IC305 DOLBY NR
PS
Adder
Amp
IC302 OP AMP
VR5-3 Master volume
S10-1 (Surround)
IC208 BUFFER AMP
Dolby
AV surround
S12-4 (Surround select)
VR4-1 Rear volume
S12-2 (Surround selector)
To power amp, Rear speaker circuit
Q407 Muting
IC402 2CH POWER AMP
Voltage amp
Power amp
Diffe-rential
Bias control
Current stabi
Muting
Q409 Over load det
SURROUND SPEAKERS
Q505,506 Hold
Q501 Regulator
Q502 Regulator
Q503 Regulator
Q504 Regulator
D501
D502
T1
S16 (Power)
IC202 MIXING (R+L)
OPTIONAL OUTPUT (CENTER CHANNEL)
Q403 Muting
IC203 MIXING (Rch)
To front output circuit
SI2-3 (Surround select)
IC206 Phase shift 5th
IC201 MIXING (L ch)
IC203 MIXING (Lch)
AV surround
SI2-1 (Surround select)
IC401 LOW BOOST AMP
Q401 Switching
FRONT OUTPUT
Q404 Muting
S9 (Bass boost)
Low cut filter in mono mode
IC207 STEREO/MONO SELECTOR
High cut filter in mono mode
IC202 L,R MIXING
Lch signal
(R-L) Signal
IC204 Phase shift 1st
IC204 Phase shift 2nd
IC205 Phase shift 3rd
IC205 Phase shift 4th
IC206 BUFFER
S14 (AV surround)
S13 (AV surround)
S15 (AV surround)
VR3-2 Effect volume
S10-2 (Surround)
IC201 MIXING (R ch)
VR5-2 Master volume
Rch signal
IC101 SOURCE
IC102 OP AMP
IC103 LED DRIVER AMP
Calibration LED
VCR1 Calibration volume
Calibration LED adj.
Q7 Muting
S10-2 (Surround)
Surround LED
VR5-1 Master volume
S11-1 (Mode select)
S11-2 (Mode select)
S12-5 (Surround select)
S1-3, S2-6, S3-6, S4-6, S5-6, S6-4, S7-4
S8-3
S5-5 (Input selector)
S4-5 (Input selector)
S8-2 (BGV)
S8-1 (BGV)on
S6-3 (Input selector)
Source
TV
S2-4 (Input selector)
S2-3 (Input selector)
AV
S3-4 (Input selector)
S3-3 (Input selector)
VCR 2
S4-4 (Input selector)
S4-3 (Input selector)
VCR 1
S5-4 (Input selector)
S5-3 (Input selector)
S7-3 (Tape monitor)
TAPE
Source/Dolby surround signal
R, L MIXING signal
Surround signal

REPLACEMENT PARTS LIST

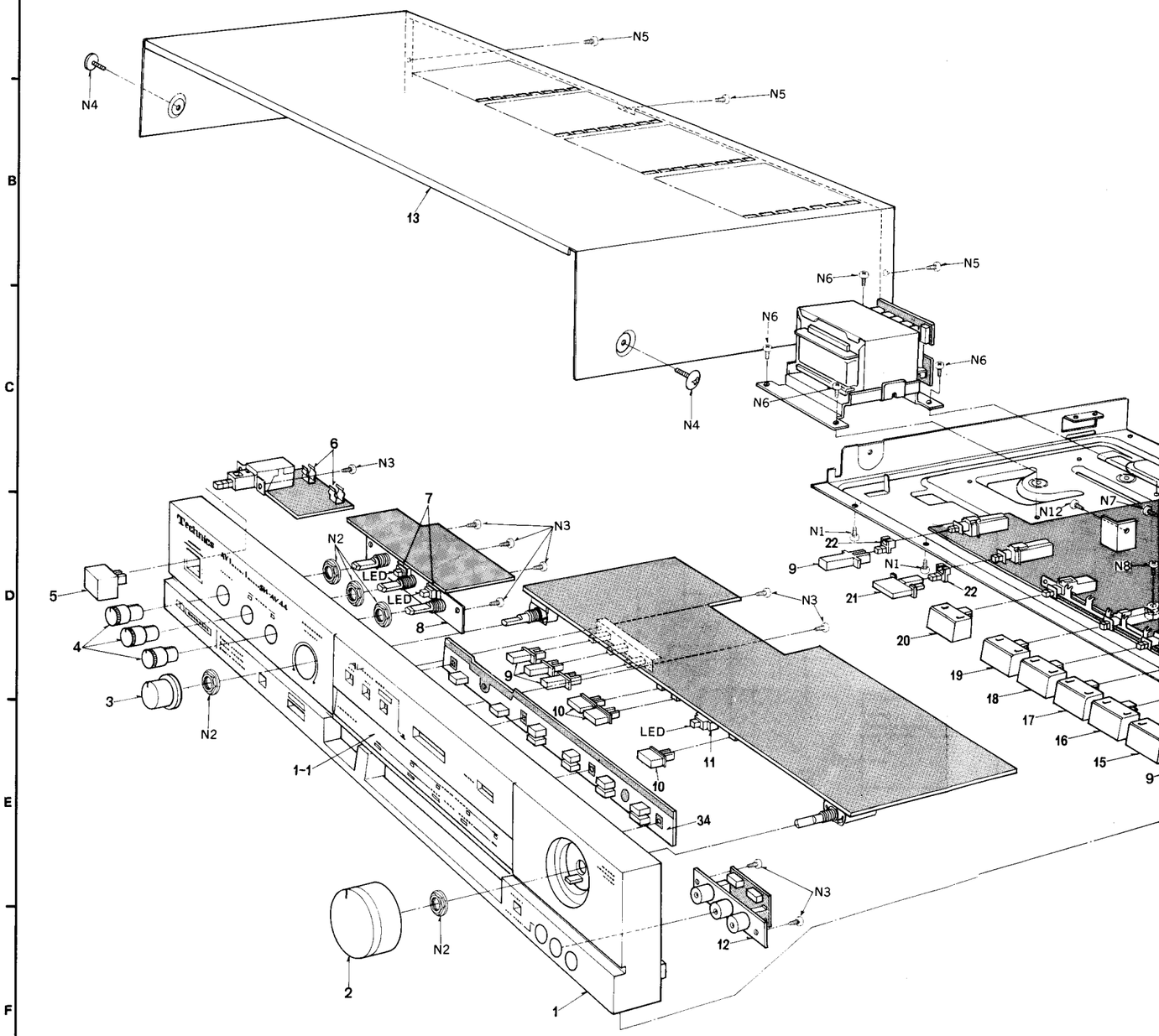
Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The parenthesized numbers in the column of description stand for the quantity per set.

Ref.No.	Part No.	Description
INTEGRATED CIRCUITS		
IC1,2	LC4066B	IC
IC3,4, 5,207	LC4066BH	IC
IC101,102, 201-206 208,301, 302,401	AN6555	IC
IC103	M5223L	IC
IC303	MN3008	IC
IC304	MN3101	IC
IC305	SVINE646N	IC
IC402	SVIK4141-2M	IC
TRANSISTORS		
Q1,6, 408,409, 505,508	2SA722-S	Transistor
Q7,8 401-407	2SC2878A-T	Transistor
Q501,502 504	2SD1406-Y	Transistor
Q503	2SB1015-Y	Transistor
Q506,507, 509	2SC1815Y	Transistor
DIODES		
D1-4 17,18, 101-103, 401,402, 507, 511-513, 515	MA165	Diode
D5	MA2056A	Diode
D6-11	LN446WP	LED
D12-15	LN346WPMS	LED
D104,105, 201	LN252RPH	LED
D202	RVDRD6R8EB	Diode
D301,514	MA29WA	Diode
D501	SVDS2VB20F1	Diode
D502	SVDS1WB40	Diode
D503,506	MA4160H	Diode
D504,505	MA4120-H	Diode
D508,510	MA167	Diode
D509	MA4150M	Diode
COILS		
L1,2	SLM1Z37-P	Coil
TRANSFORMER		
T1 ⚠	SLTK5M9-W	Power Source
VARIABLE RESISTORS		
VR1,2	EWHGHA008B24	Balance
VR3	EWKE2A537B15	Effect
VR4	EWCSDA020B54	Rear
VR5	EWK8TA062A15	Main
VR101,102, 301	EVN61AA00B14	Calibration LED Level, Bias
COMPONENT COMBINATION		
Z1	RGLD6X104K	100kΩ × 6
SWITCHES		
S1,8	SSHK68	VCR2, BGV
S2-7	SSHK63	Input Selector
S9	SSHK69	Bass Boost
S10	SSHK66	Surround
S11,12	SSHK67	Surround Mode
S13-15	SSHK65	AV Surround Mode
S16 ⚠	SSH1071	Power Source
FUSE		
F1 ⚠	XBA1F12NU14	125V, 1.2A

Ref.No.	Part No.	Description
CABINET and CHASSIS PARTS		
1	SGYHAV44-KM	Front Panel Ass'y (1)
1-1	(SGUK16-3	Display Plate (1)
2	SBN1125-2	Knob, Main Volume (1)
3	SBNK42	Knob, Effect (1)
4	SBN1161-2	Knob, Rear (3)
5	SBC666-3	Button, Power (1)
6	SJT345	Fuse Holder (2)
7	SUDK20	LED Holder (2)
8	SUWK440	Volume Bracket (1)
9	SBC719-1	Button, VCR2 (5)
10	SBC433-4	Button, Surround (3)
11	SUDK19	LED Holder (1)
12	SJFK5	VCR2 Front Input Terminal (1)
13	SKC1550BB2	Cabinet Ass'y (1)
14	SKUHAV44-KM	Bottom Board Ass'y (1)
14-1	(SKL293	Foot (4)
15	SBCK49A	Button, TV (1)
16	SBCK49F	Button, Video Disc (1)
17	SBCK49G	Button, VCR2 (1)
18	SBCK49H	Button, VCR1 (1)
19	SBCK49i	Button, Source (1)
20	SBCK50B	Button, Tape (1)
21	SBC439-2	Button, BGV (1)
22	SUB177	Connection Rod (3)
23	SHE185	PCB Holder (2)
24	SJF3061-7N	Video Terminal A (1)
25	SHR401-1	Nylon Pin (1)
26	SJF3062-9N	Terminal A (1)
27	SJF3062-10N	Terminal B (1)
28	SJF3061N	Video Terminal B (1)
29	SJF4431-1	Speaker Terminal, RCA Type (1)
31	SGPK331-2A	Rear Panel (1)
32 ⚠	SJS9223	AC Outlet (1)
33 ⚠	SJA169	AC Cord (1)
34	SHRK934	LED Speaker (1)
35	SHR301	Clamper (2)
36	SJS50371DS	Socket, (J2) (1)
36	SJS50571DS	Socket, (J1-2) (1)
36	SJS50671DS	Socket, (J8) (2)
36	SJS50871DS	Socket (J1-1,J5) (2)
36	SJS50971DS	Socket, (J6) (1)
37	SJT783	Connector Terminal (9)
38	SJS5331	Connector, (J3,6,17) (3)
39	SJT3319	Post, (J2,3,6) (3)
40	SJS5339	Connector (J2) (1)
40	SJS5815	Connector (J5) (1)
40	SJS5913	Connector (J7) (1)
40	SJS5041	Connector (J4,9) (2)
40	SJS5053	Connector (J1-1, 1-2) (2)
41	SJT3809	Post, (J5) (1)
41	SJT3013	Post, (J4, 9) (2)
41	SJT3019	Post, (J1) (1)
42	SJT3321	Post, (J17) (1)
42	SJT3909	Post, (J7) (1)
43	RHR111	Bushing, AC Cord (1)

Ref.No.	Part No.	Description
SCREWS		
N1	XTB3+10GFZ	Tapping, ⊕ 3×10 (12)
N2	SNE4021	Nut (5)
N3	XTB3+10GFYR	Tapping, ⊕ 3×10 (9)
N4	SNE2095-5	Cabinet (2)
N5	XTB3+8BFZ	Tapping, ⊕ 3×8 (3)
N6	XTB3+6F	Tapping, ⊕ 3×6 (4)
N7	XTB3+16J	Power IC (2)
N8	XTB3+16JFYR	Tapping, ⊕ 3×16 (2)
N9	XTB3+6FFYR	Tapping, ⊕ 3×6 (1)
N10	XTBS3+8FFYR1	Tapping, ⊕ 3×8 (1)
N11	XTB3+8B	Tapping, ⊕ 3×8 (4)
N12	XTB3+10B	Transistor (1)
ACCESSORIES		
A1	SJPK2202	Connection Cord (2)
A2	SJPK2101	Connection Cord (Video) (1)
A3	SQFK10148	Instruction Book (1)
PACKING		
P1	SPGK242	Carton Box (1)
P2	SPSK89	Pad, Left (1)
P3	SPSK90	Pad, Right (1)
P4	SPS4141	Pad, Upper (1)
P5	SPPK48	Polyethylene Bag (1)

EXPLODED VIEWS



■ EXPLODED VIEWS

Description	
pping, ⊕ 3×10	(12)
t	(5)
pping, ⊕ 3×10	(9)
binet	(2)
pping, ⊕ 3×8	(3)
pping, ⊕ 3×6	(4)
wer IC	(2)
pping, ⊕ 3×16	(2)
pping, ⊕ 3×6	(1)
pping, ⊕ 3×8	(1)
pping, ⊕ 3×8	(4)
ansistor	(1)
nnection Cord	(2)
nnection Cord	(1)
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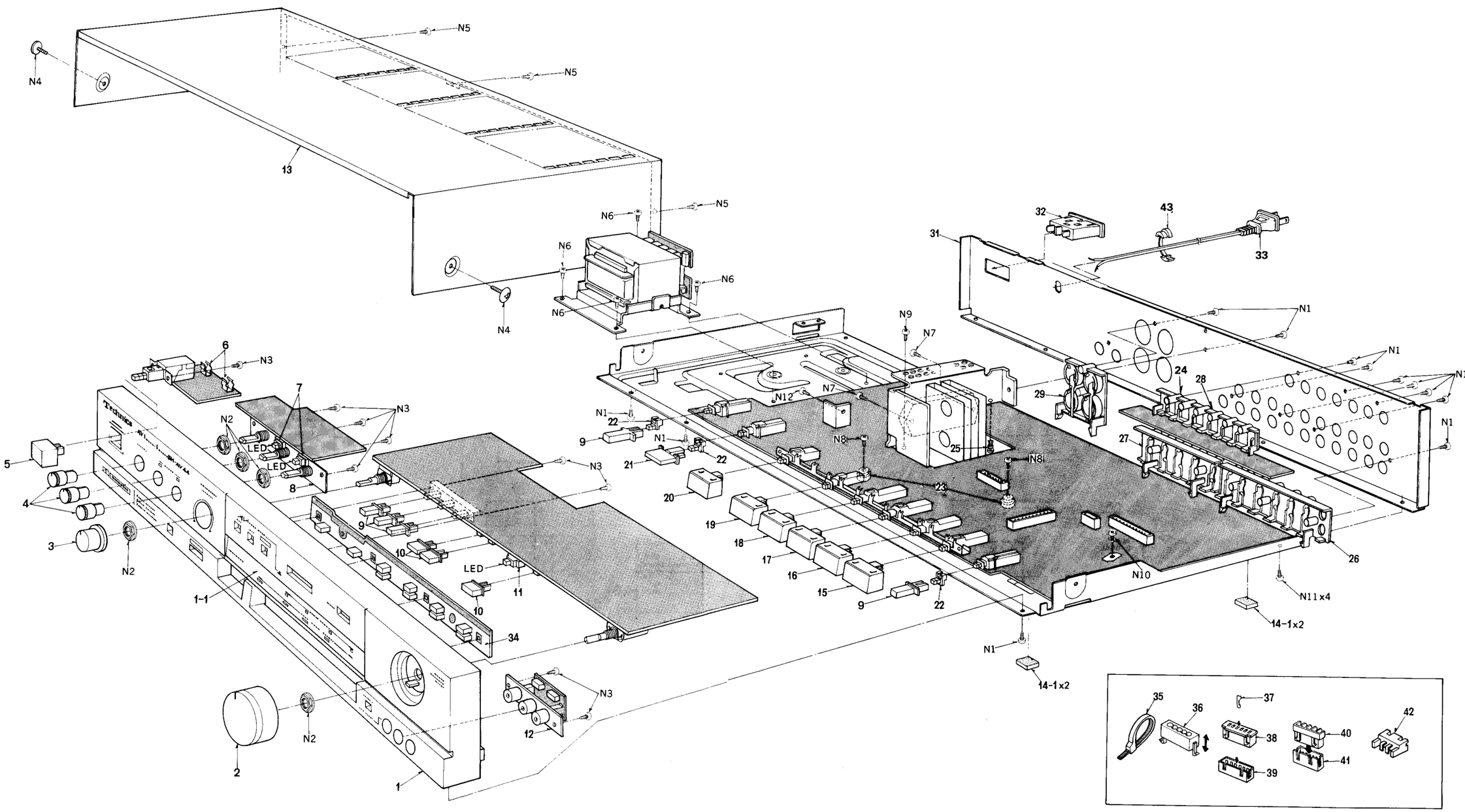
truction Book	(1)
ton Box	(1)
, Left	(1)
, Right	(1)
, Upper	(1)
ethylene Bag	(1)



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